

## CHAPTER 3

### ORGANIZATION OF MEDICAL SUPPORT FOR THE AMERICAN EXPEDITIONARY FORCES

#### INTRODUCTION

The Army deployed to France having prepared its medical care more carefully than in the past. It remained unsure how to administer the medical service that would administer this care. The problem of effective medical administration affected delivery of medical care. The Medical Department faced the challenge of organizing and administering a larger medical force than it ever had before. To understand the medical organization of the American Expeditionary Forces (A. E. F.), one must understand the personalities that ran it. The next step is to analyze the organization of General Headquarters, A. E. F., the Services of Supply, and how these interacted with the A. E. F. Chief Surgeon's office. The role played by the Allies as they helped the Medical Department adjust to the demands of the European War also aids in studying the Department's success. Finally, it is necessary to study the detailed organization and functioning of the various levels of medical support.

#### ADMINISTRATION

The A. E. F. patterned its medical section after the Army Medical Department. Neither organization achieved what it felt was the optimum staff structure. Both the General Staff in the War Department and the staff of the A. E. F. reorganized twice during the war. After the war, the *Field*

*Service Regulations* and the *Manual for the Medical Department* changed the staff organization again. This inability to decide on a staff structure complicated the functioning of the Chief Surgeon's office of the A. E. F.<sup>1</sup>

#### THE SURGEON GENERAL'S OFFICE

When war broke out, the Surgeon General, Major General William C. Gorgas headed the Medical Department. This white-haired, distinguished officer came from a military background. His father, General Josiah Gorgas, had been the chief of ordnance for the Confederacy. Gorgas joined the Medical Corps in 1880. He won an international reputation in public health through his success in controlling mosquitoes and yellow fever in Havana. He became sanitarian for the Panama Canal project, the world's expert on sanitation, and the choice for Surgeon General in 1914. His work with the civilian community, discussed in the previous chapter, was crucial in preparing the Medical Department for war.<sup>2</sup>

The Surgeon General's Office had only six medical officers and 146 civilian employees when the war broke out. Four divisions made up the office: Sanitation; Supply; Record, Correspondence, and Examining; and Museum and Library Division. By the end of the war, it had expanded to

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<sup>1</sup>Charles Lynch, Frank W. Weed, and Loy McAfee, *The Medical Department of the United States Army in the World War, Volume I, The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923), 123-126 (Hereafter referred to as *The Surgeon General's Office*). P.M. Ashburn, *A History of the Medical Department of the United States Army*, (Boston and New York: Houghton Mifflin Company, 1929), 323. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 16, *General Orders, G.H.Q., A.E.F.*, (Washington, D.C.: Government Printing Office, 1948), 1, 13-24, 216-225. (Hereafter referred to as Historical Division, *General Orders*).

<sup>2</sup>James M. Phelan "William Crawford Gorgas" *Army Medical Bulletin* 52, (April 1940), 88-93. Marie D. Gorgas and Burton J. Hendrick, *William Crawford Gorgas: His Life and Work*, (Garden City, New York: Doubleday, Page and Company, 1924), is an admiring biography written by his wife, although with little critical assessment of his work.

some thirty administrative divisions with 181 medical officers and 1, 543 civilian employees.<sup>3</sup>

#### ADMINISTRATION, A. E. F.

The A. E. F. Medical Department resembled the Surgeon General's Office. Gorgas recommended that Colonel Alfred E. Bradley be assigned as the Chief Surgeon, A. E. F.. Bradley was in England, serving as an observer with the British Forces. As the senior officer in Europe in May 1917, he had assumed supervision over the six base hospitals with the British.<sup>4</sup>

General Orders, No. 1, A. E. F., (26 May 1917) designated Bradley as the Chief Surgeon, Colonel Merritte W. Ireland as his assistant, and Major George P. Peed and Captain Harry Beeuwkes as assistants. Peed, Beeuwkes, and Major J. R. Mount accompanied Ireland and General John J. Pershing to Europe, where they joined Bradley and Lieutenant Colonel Sanford H. Wadhams and Lieutenant Colonel James R. Church on the medical staff. Both Church and Wadhams were serving as liaison officers with the Allies. General Orders, No. 8 (5 July 1917) established the staff relationships; the Chief Surgeon, A. E. F. was part of the administrative and technical staff. It assigned the Medical Corps staff responsibilities for sanitation and health, care and evacuation of sick and wounded, medical personnel and supplies, etc. These orders served as the basis for the initial organization of the Medical Department of the A. E. F.<sup>5</sup>

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<sup>3</sup>*The Surgeon General's Office*, 126.

<sup>4</sup>Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December, 1919), 640-44. Joseph H. Ford, *The Medical Department of the United States Army in the World War, Volume II, Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 19-23, 39, (Hereafter referred to as *Administration, A.E.F.*).

<sup>5</sup>Historical Division, *General Orders*, 1, 13-24. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 15, *Reports of the Commander-in-Chief, A.E.F., Staff Sections and Services*, (Washington, D.C.:

## THE CHIEF SURGEONS

Bradley proved an able administrator. He laid the ground work for the functioning of the Chief Surgeon's office, and headed that office for the first year that the United States was in the war. His health was poor, so much of the daily operations of the office fell to Ireland as his deputy. In April of 1918, he returned to the United States an invalid from a lung abscess. This abscess would eventually kill him in December 1922.<sup>6</sup>

Colonel Ireland, replaced Bradley as Chief Surgeon. Ireland had joined the Army in 1891 and had spent many years in the Surgeon General's office in the supply division and as chief of the personnel division. From 1902 to 1912, he had worked under Surgeons General Robert M. O'Reilly and George H. Torney with Jefferson R. Kean, Carl R. Darnall, and Walter D. McCaw in what was known as the "Catholic clique." Although O'Reilly was Catholic, none of the others were. This group had implemented many of the reforms recommended by the Dodge Commission. This work had given Ireland an comprehensive knowledge of the problems that the Medical Department had experienced in the Spanish-American War and the steps needed to correct them. As the previous chapter discussed, these reforms provided the basis for the medical support for the A. E. F.<sup>7</sup>

Ireland held another important post under O'Reilly, that of medical personnel officer. He was the first medical officer to hold this post, previously, the chief clerk made the assignments. He completely reorganized

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Government Printing Office, 1948), 370-71 (Hereafter referred to as *Historical Division, Reports*).

<sup>6</sup>Wadhams and Tuttle, "Early Problems," 640-44. *Administration, A.E.F.*, 19-23, 39, .

<sup>7</sup>Ashburn, *Medical Department History*, 284. John J. Pershing, "Surgeon General Merritte W. Ireland," in Ashburn, *Medical Department History*, 394-396. *Administration, A.E.F.*, 22-24. James M. Phelan "Merritte Weber Ireland," *Army Medical Bulletin* 52, (April 1940), 94-100.

the office, keeping detailed records of each officers stations and service. At the same time, he removed much of the patronage that had characterized medical assignments. The job gave Ireland an in-depth knowledge of the strengths and weaknesses of the other medical officers. This enabled him to select the best men for the various positions in the A. E. F.<sup>8</sup>

While he was at the War Department, Ireland worked with many of the officers who would play important roles in the A. E. F. In addition to Kean and McCaw, Carl R. Darnall, who did much to prepare the medical supplies for the A. E. F., James D. Glennan, who headed the Hospitalization Division, and Francis A. Winter, who served as Chief Surgeon, Lines of Communications (L. O. C.), all worked at the Surgeon General's Office. He also became acquainted with men such as Johnson Hagood who served as the Chief of Staff, Services of Supply, Peyton C. March, the Army Chief of Staff, Hunter Liggett, Robert L. Bullard, and J. T. Dickman, the three army commanders while he worked at the War Department.<sup>9</sup>

From 1912 to 1915, Ireland served at Fort McKinley in the Philippines and worked with Pershing, Hagood, and James G. Harbord. This was his second tour in the Philippines. From the Philippines, he went to Fort Sam Houston, Texas as sanitary inspector, cavalry division surgeon, and, finally, post surgeon. He held this last job during the mobilization of troops for the Punitive Expedition with Mexico. His able administration of the post during these difficult times impressed Pershing who chose Ireland to be his Chief Surgeon in the A. E. F..<sup>10</sup>

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<sup>8</sup>Ashburn, *Medical Department History*, 284-85.

<sup>9</sup>Ashburn, *Medical Department History*, 284-85. Johnson Hagood, *The Services of Supply, A Memoir of the Great War*, (Boston and New York: Houghton Mifflin Company, 1927), 8.

<sup>10</sup>Pershing, "Surgeon General Merritte W. Ireland," 394-96. Hagood, *The Services of Supply*, 11. Phelan, "Merritte Weber Ireland, 94-100.

Ireland accompanied Pershing to Europe on the *Baltic*. The Surgeon General recommended Bradley, who was senior, for the position. Ireland served as the assistant until Bradley resigned 30 April 1918. The success of the Medical Department in the World War is in many respects due to his able leadership. Probably the greatest tribute to his abilities is the respect with which Pershing held him. When Gorgas got ready to retire in the summer of 1918, Pershing sent John M. T. Finney, the chief consultant in surgery back to Washington with a message for President Woodrow Wilson. Pershing's message was brief, "We want Ireland for Surgeon General and we have *no second choice*." That Pershing would send his chief surgical consultant back to the United States shortly before the St. Mihiel operation emphasizes the importance he placed on getting Ireland the appointment. Wilson agreed with Pershing and Ireland left the Chief Surgeon's job 4 October 1918 to become the Surgeon General on Gorgas's retirement.<sup>11</sup>

Colonel Walter D. McCaw succeeded Ireland in the Chief Surgeon's job. Known for his great learning, McCaw worked with the Surgeon General in Washington before the war, as part of the "Catholic clique." He had a good sense of humor, which made him extremely popular within the Medical Department. From 1909-1913, he served as the Librarian for the Army Medical Library under Surgeon General George H. Torney. From this prestigious job, he went to Texas during the Punitive Expedition as the Chief Surgeon of the Department and worked with both Pershing and Ireland. Ireland respected him enough to recommend McCaw for Chief Surgeon when

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<sup>11</sup>Ashburn, *Medical Department History*, 284. John J. Pershing, "Surgeon General Merritte W. Ireland," in Ashburn, *Medical Department History*, 394-396. *Administration, A.E.F.*, 22-24. James M. Phelan "Merritte Weber Ireland" *Army Medical Bulletin* 52. (April 1940), 94-100. James G. Harbord, *The American Army in France, 1917-1919*, (Boston: Little, Brown, and Company, 1936), 579-583. John M. T. Finney, *A Surgeon's Life*, (New York, G. P. Putnam's Sons, 1940), 193-194 (italics present in original).

Bradley resigned. Before becoming Chief Surgeon, McCaw headed the Sanitation and Inspection Division in the A. E. F.<sup>12</sup>

#### THE CHIEF SURGEON'S OFFICE

The first A. E. F. Headquarters was in Paris on the Rue Constantine. The medical section had only three small rooms in which to do business. As there were seven medical officers and about twice that many clerks assigned to the Chief Surgeon's office at the time, the office was quite cramped. As more troops and other personnel arrived, the crowding worsened and the Chief Surgeon's office moved to the old Hotel St. Anne. The main problems confronting the office at this time involved adapting doctrine to the realities of the front and preparing medical facilities for the soldiers arriving from the United States. It struggled to solve these problems, as it lacked officers.<sup>13</sup>

The Chief Surgeon's office made the first of many calls for personnel from base hospitals; these were the only source of additional manpower in Europe. It took the Regular Army adjutants from the six base hospitals serving with the British. Bradley reassigned two of these men to the Chief Surgeon's office and four to the Chief Surgeon, Lines of Communications, (L. O. C.). These experienced medical officers added sorely needed personnel to these offices. The base hospitals also supplied enlisted soldiers to serve as clerks and other administrative assistants. These additional officers allowed a reorganization on 28 July 1917, to help handle the arriving troops and base hospitals.<sup>14</sup>

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<sup>12</sup>*Administration, A.E.F.*, 24-26. James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927), 22,39. Ashburn, *Medical Department History*, 284, 323.

<sup>13</sup>Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 42-45.

<sup>14</sup>Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45, 48-49. Historical Division, *Reports*, 370-71.

The reorganization divided the Chief Surgeon's office into six divisions. These were Hospitalization, Sanitation and Statistics, Personnel, Supplies, Records and Correspondence, and Chemical Warfare Service. The executive officer assisted the chief surgeon and was in general charge of the administration of the medical service. The functions of the divisions are self-explanatory.<sup>15</sup> The A. E. F. established a Chemical Warfare Service in September 1917 as a separate staff section, it took over the division in the Chief Surgeon's office. The Chemical Warfare Service received medical input from a medical officer assigned to the division.<sup>16</sup>

Ireland served as assistant to the Chief Surgeon and ran the Personnel division. Colonel Wadhams headed the Hospitalization Division, Franco-American liaison, and general estimates on personnel and equipment. Major Daniel W. Harmon was responsible for sanitation and statistics; Major J. R. Mount, for supplies. Church had responsibility for the medical aspects of gas warfare. The only division to have more than one officer assigned was Hospitalization, which had Major Arnold D. Tuttle as assistant. Although the number of officers in the Chief Surgeon's office still was small, the formation of the divisions allowed the A. E. F. Medical Department to start to plan medical support and to answer the medical questions of how to adapt doctrine to the situation overseas.<sup>17</sup>

#### EXPANSION OF CHIEF SURGEON'S OFFICE

The summer of 1917 was a time of expansion both for the A. E. F. and its medical section. In August, dental and veterinary sections started in the

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<sup>15</sup>War Diary, Chief Surgeon's Office, A. E. F., 28 July 1917 reprinted in *Administration, A.E.F.*, 44-45.

<sup>16</sup>General Orders No. 31, General Headquarters, A.E.F., 3 September 1917, Historical Division, *General Orders*, 67. *Administration, A.E.F.*, 44-45.

<sup>17</sup>Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45.

personnel division. These expanded to become the dental and veterinary divisions of the Chief Surgeon's office. The Chief Surgeon's office moved to Chaumont with the General Headquarters (G. H. Q.) in September 1917. This gave it much more room than it had had in Paris. The Chief Surgeon's office continued to grow. A proposed table of organization from 9 October 1917 requested authorizations for four general officers, fourteen field grade officers and 255 clerks and soldiers. Each army headquarters would also have a brigadier general and staff. General Pershing did not approve this organization; he did approve one on 22 December 1917 that included one general officer, seventeen field grade officers, fourteen company grade officers, and 256 enlisted men for the Chief Surgeon's Office. The office at G. H. Q. never reached those numbers. By 10 January 1918, it had only twenty-one officers and fifty-eight clerks and soldiers assigned.<sup>18</sup>

#### LINES OF COMMUNICATIONS

During the summer of 1917, the Lines of Communications also formed. According to the 1914 edition of the *Field Service Regulations*, this organization managed the Rear Zone of the Zone of Operations. The L. O. C. were divided into five Base Sections, an Intermediate Section, and an Advance Section. The L. O. C. supplied what is now called combat service support for the combatant forces. General Order No. 20, A. E. F., 13 August 1917, defined the geographical limits of the L. O. C. as extending from "the sea to the points where delivery of supplies is made to the field transportation of the combatant field forces." The Base Sections received supplies from the

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<sup>18</sup> Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 2, *Policy-Forming Documents American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1948), 24, 31, 113 (Hereafter referred to as *Historical Division, Policies*). Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45. Historical Division, *General Orders*, 113.

United States; they shipped the supplies on to the Intermediate Section. Here, the supplies went to the Advance Section and subsequently to the front. The L. O. C. eventually contained all the base, camp, and convalescent hospitals, as well as the medical supply depots, laboratories and all medical units not assigned to corps, divisions, or armies.<sup>19</sup>

The A. E. F. benefitted greatly when Colonel Winter arrived in France in July 1918 to take over as Chief Surgeon, L. O. C.. Winter was an experienced medical supply officer and his understanding of supply procedures helped make the system work. The main administrative work concerning medical supplies took place in the L. O. C.. In one of his first actions as Chief Surgeon, L. O. C., Winter established a medical supply depot at Cosne. This proved invaluable as an accumulation and distribution point. Problems arose in the coordination of medical supply issues, as both the Chief Surgeon's Office at A. E. F. Headquarters and that at the L. O. C. made decisions on supply questions. Winter wrote a letter to the Chief Surgeon in February 1918, recommending centralization of supply control.<sup>20</sup>

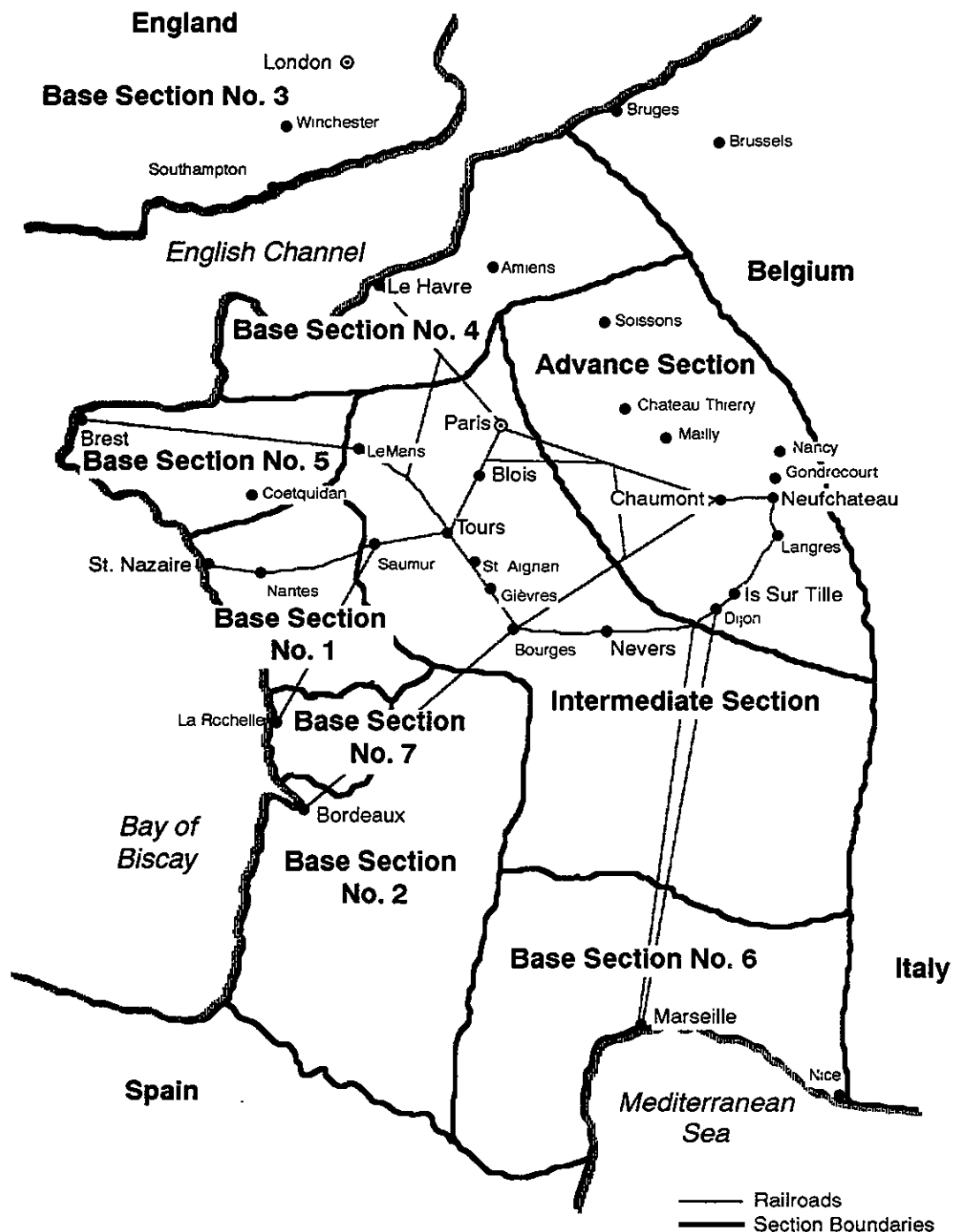
Confusion and coordination problems developed in other areas also. Initially, when both G. H. Q., A. E. F. and G. H. Q., L. O. C. were in Paris, there was considerable overlap in responsibilities. Often questions relating only to the L. O. C. ended up in the Chief Surgeon's Office, A. E. F. and vice versa. After G. H. Q., A. E. F. moved to Chaumont, this division of responsibility became better defined.<sup>21</sup>

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<sup>19</sup>War Department, *Field Service Regulations, United States Army 1914*, (Washington, D.C.: Government Printing Office, 1914), 1-4, . Hagood, *The Services of Supply*, 44-47. Historical Division, *Reports*, 3-5. Historical Division, *General Orders*, 52-53.

<sup>20</sup>*Administration, A. E. F.*, 387-89. Historical Division, *General Orders*, 216-25. Wadhams and Tuttle, "Early Problems," 649-52. Historical Division, *Reports*, 381-82.

<sup>21</sup>*Administration, A.E.F.*, 230. Wadhams and Tuttle, "Early Problems," 640-42.



**Figure 1: The Advance, Intermediate and Base Sections of the S. O. S.<sup>22</sup>**

<sup>22</sup>Adapted from Hagood, *The Services of Supply*, 47, and *Administration, A.E.F.*, Figure 1 opposite page 30. This shows the situation after the formation of Base Sections 6 and 7 in June 1918.

## THE SERVICES OF SUPPLY

Problems arose in G. H. Q. from the sheer amount of activity centered there. Pershing worried that he had created a copy of the War Department at Chaumont. There was a great deal of jurisdictional dispute over supply matters between the L. O. C. and G. H. Q. An attempt to correct the chaotic situation in supply for the A. E. F. resulted in General Orders No. 73, A. E. F. on 12 December 1917. This order detailed the responsibilities of the Chiefs of the Supply Departments in procuring supplies. It assigned the Commanding General, L. O. C. responsibility for storage and distribution of supplies. It divided supplies into four classes; medical supplies fell into the second class, supplies for the individual to perform his tasks as a soldier. It also described the functioning of a railhead and a regulating station.<sup>23</sup>

Although this order helped the supply situation, it did nothing to shrink the size of G. H. Q. Pershing felt that the best way to do this was through sending the bureau chiefs back to the L. O. C. This would leave only the military advisers and the Inspector General at G. H. Q. He commissioned a board, headed by Hagood, to look into ways to decrease the size of the headquarters. The Hagood Board recommended that the L. O. C. be renamed and that the Chiefs of Services, except for Adjutant General, Inspector General, and Judge Advocate move to the renamed L. O. C. It envisioned the S. O. S. as a central headquarters for supply, to include the G-1 and G-4 sections of the General Staff at G. H. Q.<sup>24</sup>

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<sup>23</sup>Historical Division, *General Orders*, 136-40. Hagood, *The Services of Supply*, 65-72. James A. Huston, *The Sinews of War: Army Logistics 1775-1953*, Army Historical Series, (Washington, D. C.: Office of the Chief of Military History, United States Army, 1966), 360-61.

<sup>24</sup> Hagood, *The Services of Supply*, 129-147. Huston, *Sinews of War*, 360-61.

These recommendations led in February 1918, to a complete reorganization of logistic support in the A. E. F. General Orders No. 31, 1918 moved all the chiefs of services, except the adjutant general, the Inspector General, and the Judge Advocate, to the L. O. C., renamed the Services of Supply (S. O. S.). The same order divided the general headquarters, A. E. F., into five separate staff sections designated G-1 to G-5. The chiefs of services sent to the S. O. S. remained on the Commander-in-chief's staff.<sup>25</sup>

The separation from G. H. Q. and the lack of specific medical representation on the General Staff rankled Bradley. He wrote Pershing on 15 March 1918, detailing his objections. He argued for a separate medical section on the General Staff headed by an experienced medical officer. He based his assessment on the French system; the French added a *service de santé* to their G. Q. G. (French General Headquarters) after the disastrous medical support for the April 1917 offensives.<sup>26</sup> The Assistant Chief of Staff, G-4, Brigadier General W. D. Connor, opposed Bradley's request; G. H. Q., A. E. F. never added a separate medical section. According to Wadhams, "The lack of action in the matter was a source of bitter disappointment to the Chief Surgeon."<sup>27</sup>

Like the other staff sections sent to the S. O. S. at Tours, Bradley realized he needed to maintain medical representation on the General Staff. He assigned Wadhams to remain at Chaumont as his deputy. In addition, he assigned the following officers to remain at G. H. Q. as liaison with the

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<sup>25</sup>Harbord, *American Army in France*, 211-17. Hagood, *The Services of Supply*, 129-147. Historical Division, *General Orders*, 216-25. *Administration, A.E.F.*, 46-48. Historical Division, *Reports*, 370-71. Historical Division, *Policies*, 199-200, 204-07, 224-26.

<sup>26</sup>Letter, chief surgeon A. E. F. to the commander-in-chief, A. E. F., 15 March 1918, reprinted in *Administration, A.E.F.*, 60-61.

<sup>27</sup>*Administration, A.E.F.*, 60-61. Sanford H. Wadhams, "Report on Activities of G-4 'B,'" reprinted in *Administration, A.E.F.*, 67.

various staff sections. Colonel A. P. Clark worked in G-1, Beeuwkes worked in G-2 and served as the attending surgeon to G. H. Q., Colonel M. W. Shockley worked in G-3 and G-5, and Colonels Paul C. Hutton and Arnold D. Tuttle worked in G-4. The representation with G-2 proved unnecessary and ended in May 1918.<sup>28</sup>

Despite the attempt by the Hagood Board to move matters of supply to the S. O. S., much of the responsibility for supply fell on the G-4 section at G. H. Q. Many felt that this reflected the abilities and personality of Brigadier General George Van Horn Moseley. The G-4 supervised hospitalization and evacuation of the sick and wounded, so most of the medical liaison and other work was with that section. Eventually, the G-4-B section became the medical section of the General Staff.

Having medical officers functioning solely as liaison officers on the General Staff did not work. The G-4 section exercised much control over the medical supplies and hospitalization. This resulted, in part, because the S. O. S. had no responsibility over the armies, corps, and divisions. All decisions relating to the combat forces went through G. H. Q. Ireland worked to get his liaison officers assigned to G. H. Q., which would allow the Medical Department some say in care of the combat forces. Accordingly, General Orders No. 73, on 10 May 1918, assigned Wadhams and Shockley to the General Staff and General Orders No. 138, 23 August 1918, did the same for Clark and Tuttle. The medical section remained small, averaging four medical officers, two sanitary officers, and a clerical staff, yet it performed the difficult job of coordinating medical support for all combat units in France. It also issued policies, at the Chief Surgeon's request, concerning the

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<sup>28</sup>Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 59.

whole A. E. F. The Chief Surgeon's office issued all policies concerning only the S. O. S.<sup>29</sup>

The medical section of the General Staff assumed responsibility for medical support of field operations. Before the medical officers officially became part of the General Staff and under Connor, problems arose in coordinating Medical Department activities with those of the G-4. However, after May, when Moseley became the Assistant Chief of Staff, G-4 at G. H. Q., the system developed to handle effectively medical issues. The next chapter will discuss the role of the medical section of G-4 during the battle of Cantigny, when Colonel Paul Hutton managed the hospitalization and evacuation of the American forces. The section handled the duties of army surgeon until Colonel Alexander N. Stark assumed that job for the First Army.<sup>30</sup>

In retrospect, the organization of the Services of Supply hampered the smooth operation of medical support for the A. E. F. The Chief Surgeon needed to be centrally located where he could set policy regarding the whole force. He could have more easily delegated to a deputy the day-to-day running of the medical service than he could give up the important job of advising the commander-in-chief, A. E. F. Throughout the war, there was no one section responsible for Medical Department activities in the zone of the armies. The Chief Surgeon needed to have control over the medical support for the combat forces, instead of having to work through a deputy. The situation developed to such an extent that in October 1918, Moseley proposed a General Order that would have removed "the Chief Surgeon, A. E. F. from

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<sup>29</sup>Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 60-62. Historical Division, *General Orders*, 318-19, 423-24.

<sup>30</sup>*Administration, A.E.F.*, 64.

all responsibility for the sick and wounded in the forward areas and to place that responsibility upon a subordinate medical officer attached to the G-4 at G. H. Q." Generals Hagood and Harbord prevented the order from being issued.<sup>31</sup>

The importance of the G-4 in the supply system defeated the purpose of the reorganization under the S. O. S. Each bureau chief, sent to the S. O. S., found he had to maintain a deputy at G. H. Q. to fully control his service. Wadhams, at G. H. Q. and the Chief Surgeon, Ireland, worked closely together to insure unity of purpose between the two medical staffs. Wadhams received excellent support from Moseley and the rest of the G-4 section. The ability to work together despite the official lines of responsibility allowed the system to work.<sup>32</sup>

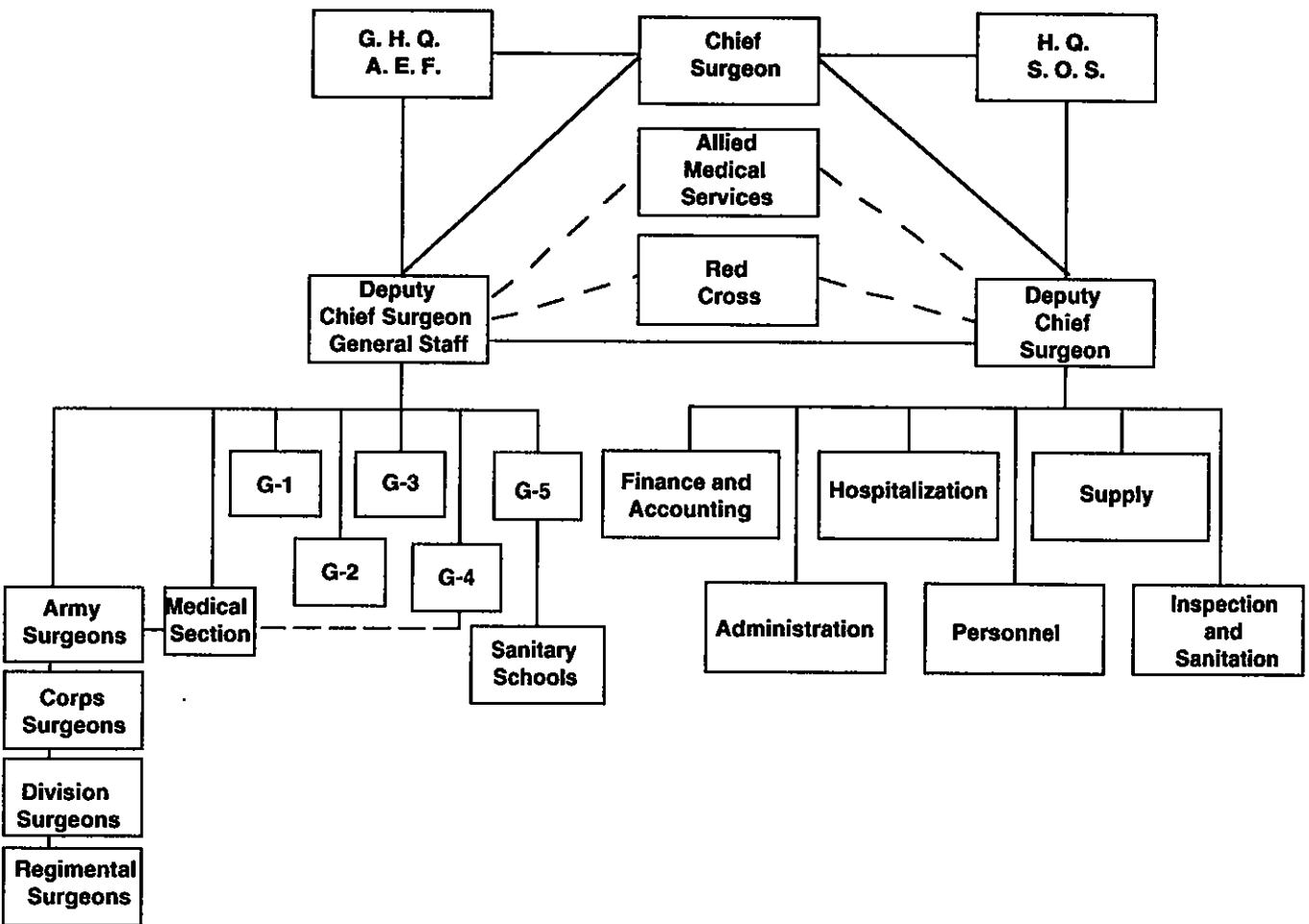
#### CHIEF SURGEON'S OFFICE AT THE SERVICES OF SUPPLY

Meanwhile, the Chief Surgeon adapted to his new position at Services of Supply. The Chief Surgeon's office absorbed the office of the Chief Surgeon, L. O. C.. The office was organized into six divisions: "general administration, records, and correspondence; hospitalization, evacuation, and hospital administration; sanitation, sanitary inspection, and medical statistics; personnel; medical supplies; finance and accounting."<sup>33</sup> General Orders, No. 139, on 29 August 1918 added a veterinary section to this organization. Figure 2 shows the medical organization. Examining each of

<sup>31</sup>*Administration, A.E.F.*, 62, 67. [Alexander N. Stark, Leon C. Garcia, Albert P. Clark], "Report on Organization, Equipment, and Functions of the Medical Department," reprinted in *Administration, A. E. F.*, 835-902 (Hereafter referred to as "Report on Organization, Equipment, and Functions"). Hagood, *The Services of Supply*, 321-334.

<sup>32</sup>*Administration, A.E.F.*, 62, 67. "Report on Organization, Equipment, and Functions," 835-902. Hagood, *The Services of Supply*, 321-334.

<sup>33</sup>*Administration, A.E.F.*, 52.



**Figure 2:** Organization of the Medical Department, A. E. F.<sup>34</sup>

<sup>34</sup>Adapted from Chart II, *Administration, A.E.F.*, 55.

these divisions and their subdivisions provides a better understanding of how medical support functioned in the A. E. F.<sup>35</sup>

#### ADMINISTRATION DIVISION

The Administration (records and correspondence) Division was a small division, which provided the administrative and clerical support to the Chief Surgeon's office. The division constantly struggled under shortages of paper, forms, and clerical personnel. It eventually expanded to over 500 personnel under Lieutenant Colonel Robert A. Dickson. One of the most difficult jobs handled was mail delivery. When the A. E. F. deployed, the Army made inadequate preparations for mail service. All mail for Medical Department personnel arrived care of the Chief Surgeon's office and fell on the Administration division to deliver. This overworked section did not have the clerks required to perform this job. When the first American postal officials arrived in July 1918, the Medical Department had 10,000 letters awaiting them.<sup>36</sup>

#### PERSONNEL DIVISION

Responsibility for the administrative control of Medical Department personnel lay with the Personnel Division. It controlled all matters of promotion, assignment, and occasionally appointment. To assist, it had several subsidiary sections. These were dental, veterinary, and nursing services. The largest challenge faced by the Personnel division was to

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<sup>35</sup>*Administration, A.E.F.*, 52-53. Historical Division, *General Orders*, 426. Historical Division, *Reports*, 371.

<sup>36</sup>*Administration, A.E.F.*, 85-87.

prevent the personnel shortage to interfere with health care delivery to the soldiers.<sup>37</sup>

The shortage of medical personnel had two main causes. When war appeared imminent, the Surgeon General's Office had estimated the percentage of personnel needed to support an expeditionary force. This number was about fourteen per cent of a force of a million soldiers, and used the French and British experiences as predictors of need. Unfortunately, for the Medical Department, the priority schedule adopted in August 1917 allowed only 7.65 per cent for medical units. This left a significant shortage, even if everything worked properly.<sup>38</sup>

Unfortunately, not everything worked properly. This was the second cause of medical personnel shortages. The Allies wanted more infantry and machine gun units in France. The United States complied with that request sending these units to the exclusion of the support units. For example, the A. E. F. received only 600 casual medical officers 30 September 1917 and 250 more in November 1917. These were the only casual medical officers to arrive until June 1918. Many of these officers got taken by the division and regimental medical units while the officers waited for assignment at the training depots. Table 1 shows the shortages of medical personnel compared with the strength of the Medical Department and the A. E. F. It shows that the A. E. F. was often twenty-five to thirty per cent short on medical personnel.<sup>39</sup>

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<sup>37</sup>Historical Division, *Reports*, 400. War Department, *Report of the Surgeon General, 1919*, (Washington, D. C.: Government Printing Office, 1919), 1290. *Administration, A.E.F.*, 89.

<sup>38</sup>Historical Division, *Reports*, 400-01. *Report of the Surgeon General, 1919*, 1291-92.

<sup>39</sup>*Report of the Surgeon General, 1919*, 1295. Harbord, *The American Army in France*, 491-492.

Date	Officers	Nurses	Soldiers	Total	Shortage
Jun 1918	5,198	2,539	30,674	38,411	13,671
Aug 1918	9,601	4,735	67,140	81,476	
Oct 1918	14,483	7,522	104,557	126,562	26,497
Nov 1918	17,487	8,951	137,403	163,841	38,552

**Table 1: Medical Department Personnel Strengths and Shortages<sup>40</sup>**

The Medical Department was not alone in this, all the support services suffered. By September 1918, the A. E. F. numbered about a million and a half soldiers. This force lacked the necessary artillery, engineers, laborers, as well as medical units. G. H. Q. sent cables to the War Department requesting no more combat units and only support troops, however, the War Department could not change the priority schedule. The S. O. S. provided soldiers to the combat divisions to get them sufficient support, which greatly weakened the S. O. S.'s ability to function. In September, the situation was so serious that at the request of Harbord, G. H. Q. sent three combat divisions to the S. O. S. to use for general support.<sup>41</sup>

#### MEDICAL SUPPLY DIVISION

The Supply Division had responsibility for all the medical supplies that the A. E. F. used. Again preparation before the war paid great benefits. The initial medical units in France were the Red Cross base hospitals. These hospitals had acquired their equipment through donations to the Red Cross. This stockpiling of medical supplies through the base hospitals allowed the

<sup>40</sup>From Historical Division, *Reports*, 401-02. Charles Lynch, Joseph H. Ford, and Frank W. Weed, *The Medical Department of the United States Army in the World War, Volume VIII, Field Operations*, (Washington, D.C.: Government Printing Office, 1925), 18-19 (Hereafter referred to as *Field Operations*).

<sup>41</sup>Hagood, *The Services of Supply*, 314-320.

medical department to acquire medical supplies when Congress had not appropriated any funds for their purchase.<sup>42</sup>

The medical supply system suffered the same problems from lack of transportation and personnel that the rest of the Medical Department did. Medical units brought over to France the supplies called for in the *Manual for the Medical Department*. Combat in France proved more deadly and of a greater intensity than that anticipated by the authors of the manual, so the units had a relative lack of medical supplies. As with the rest of medical support, medical supplies had a low priority on the transports from the United States. The A. E. F. set up a general purchasing board to purchase supplies in Europe. A. P. Clark, assigned to the board, handled medical supply items. Unfortunately, the war had already emptied the medical supplies available in Europe and the A. E. F. relied mainly on supplies shipped from the United States.<sup>43</sup>

Earlier, the discussion addressed the formation of the medical supply depot at Cosne, by Winter as the Chief Surgeon, L. O. C. This proved invaluable as an accumulating and distributing point. One problem arose; Cosne was on a secondary rail line. This railroad could not handle the increase in freight and so the Medical Department established other medical supply depots at Gievres and Is-sur-Tille. Cosne eventually expanded to 100,000 square feet, Gievres to 391,436, and Is-sur-Tille to 95,862. By the signing of the armistice, the A. E. F. had additional supply depots and storage stations in Liverpool, England; Cristo, Italy; Montierchaume, Montoir, St.

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<sup>42</sup>Historical Division, *Reports*, 380.

<sup>43</sup>*Administration, A. E. F.*, 387-88. Wadhams and Tuttle, "Early Problems," 649-52.

Nazaire, St. Sulpice, Bordeaux, Brest, Marseille, Le Mans. Treves, Germany became an advanced medical supply depot for the Army of Occupation.<sup>44</sup>

The War Department had the responsibility to ship the appropriate medical supplies to France according to the priority schedule. This system failed to adequately meet the requirements. The Chief Surgeon assigned Colonel A. P. Clark the duty of drawing up an "automatic supply list." This was a list of medical supplies for the War Department to send to France, based on troop strength. He based the list on the supplies needed for each 25,000 men in Europe and the necessity for establishing a ninety day reserve in France. He submitted the original list in September 1917. The list was simplified in February 1918 and further modified in April 1918 to determine supplies needed every three months rather than monthly and those that needed to be controlled by requisition.<sup>45</sup>

The development of an automatic supply list proved an important innovation for the Medical Department. It represented the first time, the department used what is now known as "push" supply system. This system, which sends a standard package of supplies to a force based on a time schedule and the size of the force, markedly reduced the administrative requirements of providing medical supply. It works well for medical supply, because of the repetitive and routine nature for much of medical supply and is still used today.

The urgent demand for combat troops and their supplies upset the carefully planned medical supply schedule. The A. E. F. rapidly used up the small reserve of medical supplies. The situation became so bad that the

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<sup>44</sup>*Administration, A. E. F.*, 391-92. Wadhams and Tuttle, "Early Problems," 649-52. Historical Division, *Reports*, 381-82.

<sup>45</sup>*Administration, A. E. F.*, 401. Wadhams and Tuttle, "Early Problems," 649-52.

medical officers referred to it as the "starvation period." Only through careful management of supplies did the Medical Department avoid shortages. The Surgeon General's Office had calculated that the medical units in Europe would require one per cent of the shipping. This did not take into account the need to build up a reserve and the medical planners in the Chief Surgeon's office, A. E. F. recommended 1.8 per cent of the total tonnage. This was much higher than the Medical Department ever received, so it was never able to build up even a forty-five day reserve. Despite these hardships, lack of medical supplies never interfered with medical care.<sup>46</sup>

#### FINANCE AND ACCOUNTING

Closely related to the Supply Division was the Finance and Accounting Division. This small division had responsibility for money accounting, disbursing and property accounting for the A. E. F. Medical Department. It formed in the United States in the fall of 1917, with seven officers and 137 enlisted men. These deployed to France in the winter of 1918, and started work in March 1918. The division helped the Chief Surgeon's office immensely, in saving money on contracts, in collecting money due the government and similar jobs. By having a separate finance division, spared medical officers needed elsewhere.<sup>47</sup>

#### SANITATION DIVISION

One of the most impressive changes in medical care from the Spanish-American War to World War I was in the general health of the soldiers. The Sanitation Division was responsible for much of this good health. It took care

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<sup>46</sup>*Administration, A. E. F.*, 401-02. Wadhams and Tuttle, "Early Problems," 649-52.

<sup>47</sup>Historical Division, *Reports*, 382-84. *Report of the Surgeon General, 1919*, 1348-54. *Administration, A.E.F.*, 408-16.

of all preventive medical issues for the A. E. F. The division consisted of four sections: sick and wounded records; laboratories and infectious disease; inspection; epidemiology. The first head of the division was Daniel W. Harmon. McCaw replaced him, and Colonel Percy M. Ashburn took over when McCaw became Chief Surgeon.<sup>48</sup>

The Sanitation Division faced a vast challenge. The sanitary conditions in France in 1917 and 1918 were horrendous. The ravages of four years of trench warfare had left the water supplies damaged, venereal disease rampant, muddy trenches filled with lice and other vermin. Overall, disease and non-battle injuries remained an important problem in the A. E. F. From fifty-three to ninety per cent of admissions resulted from these causes during 1917 and 1918. The wide range resulted from the variation in the amount of combat American soldiers faced. The first chapter discussed the disastrous epidemics of typhoid that decimated the Army in the Spanish-American War. In 1914, the French suffered 50,000 cases of typhoid. The American forces never suffered an epidemic. In the A. E. F., there were only 885 cases of typhoid with 148 deaths. This was because the soldiers received instruction in hygiene, vaccinations against typhoid and paratyphoid, and the Sanitation Division inspected water supplies and prevailed on commanders to enforce the sanitary regulations.<sup>49</sup>

The worst communicable disease threats were the respiratory infections. In 1918, an influenza pandemic swept through the world. It did not spare the A. E. F. The A. E. F. had 228,461 admissions for influenza,

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<sup>48</sup>*Administration, A.E.F.*, 133-36.

<sup>49</sup>Ashburn, *Medical Department History*, 334-35. Albert G. Love, The Medical Department of the United States Army in the World War, Volume XV, *Statistics, Part Two Medical and Casualty Statistics*, (Washington, D.C.: Government Printing Office, 1925), 87, 135 (Hereafter referred to as *Medical Statistics*). *Report of the Surgeon General, 1919*, 1309-10, 1335-36.

30,048 for pneumonias and 15,849 deaths from these. The worst month was October 1918, when the combination of the influenza epidemic and the Meuse-Argonne offensive stressed the entire medical system.<sup>50</sup>

The Division of Laboratories and Infectious Disease had its headquarters at Dijon. Colonel Joseph F. Siler headed the division. This division centralized the control of all medical laboratories in France and standardized their operation. It also inspected them to insure that they met the standards. This promoted a high standard in the medical laboratories, which became an important adjunct to medical care.<sup>51</sup>

#### HOSPITALIZATION DIVISION

The Hospitalization Division was the largest division and its work was probably the most visible of all Medical Department activities in France. Before the reorganization of G. H. Q., Wadhams headed this division with Tuttle as his assistant. The first step in securing adequate hospitalization for the A. E. F. was to coordinate with the French regarding locations and facilities for hospitals. When the United States declared war, Wadhams was a liaison officer with the French. Before the arrival of G. H. Q., he made an inspection tour of French military hospitals to find out which ones the Americans could take over. This allowed the French to start work in St. Nazaire on a camp hospital for arriving Americans. Wadhams had the additional duty of liaison officer to the French to establish the hospitalization system.<sup>52</sup>

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<sup>50</sup>*Medical Statistics*, 87, 95, 135, 143. *Report of the Surgeon General, 1919*, 1335-36.

<sup>51</sup>*Administration, A.E.F.*, 76-77, 229-30. *Report of the Surgeon General, 1919*, 1309-10. Historical Division, *Reports*, 382-84.

<sup>52</sup>*Administration, A.E.F.*, 76-77, 229-30. Wadhams and Tuttle, "Early Problems," 645-49. James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927), 38.

The hospitalization section at G. H. Q. dealt with questions of policy and procurement of hospitals. The Chief Surgeon for the L. O. C. had responsibility for hospitals, medical supplies, and personnel in the L. O. C.. This led to considerable overlap in responsibilities. Both offices handled questions relating to placement and functioning of hospitals. When the Chief Surgeon's office, A. E. F., combined with that of the L. O. C. in the S. O. S. at Tours, the responsibilities of the hospitalization section changed again. The medical section at G. H. Q., assumed responsibility for the medical support of the armies in the field, location and procurement of fixed hospital facilities, liaison with the French and general medical policy. The Hospitalization Division at the S. O. S. worked on general matters of hospitalization, administration, and evacuation.<sup>53</sup>

The Hospitalization Division played a crucial role in adapting pre-war medical doctrine to the conditions in France. The first problem addressed concerned the proper supervision of the various specialties. Other problems facing the division were the construction of adequate hospital facilities, organization of the hospitals, addition of new hospital formations to adjust to the different conditions at the front, and establishment of evacuation means throughout the A. E. F.<sup>54</sup>

#### PROFESSIONAL SERVICES

One of the most significant changes affecting the medical community worldwide was increasing specialization. To provide proper specialty care required supervision by physicians trained in the various specialties. The Surgeon General's Office created divisions to advise the Surgeon General on

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<sup>53</sup>*Administration, A.E.F.*, 229-30. Wadhams and Tuttle, "Early Problems," 640-42.

<sup>54</sup>*Administration, A.E.F.*, 229-30. Wadhams and Tuttle, "Early Problems," 640-42.

these subservices. These were the divisions of General Medicine, Infectious Diseases and Laboratories, Neurology and Psychiatry, Psychology, Urology, Combating Venereal Disease, Roentgenology, Reconstruction, General Surgery, Military Orthopedic Surgery, and Head Surgery. Heading these divisions were civilian physicians commissioned who had received reserve commissions in the Medical Corps. These were men like William P. Welch and Warfield T. Longcope of Johns Hopkins, Charles H. and William J. Mayo of the Mayo Clinic, all professors at prestigious medical schools throughout the country. The ability to have the advice of the finest medical men in the nation did a great deal to ensure the care given in Army hospitals met the standards of the best hospitals of the day.<sup>55</sup>

These specialists worked with the Surgeon General to design an efficient distribution of specialties in the base hospitals. The memorandum of the Surgeon General dated 11 November 1917 described this organization. It divided the specialists into three major divisions, medical, surgical, and laboratory services. These three services had eight sub-services, five surgical, two medical, and laboratory services.<sup>56</sup>

The A. E. F. organized its professional services similarly. Circular No. 2, dated 9 November 1917, established the division of professional services with these eight subdivisions: General Medicine, General Surgery, Orthopedic Surgery, Surgery of the Head, Venereal, Skin, and Genitourinary (Urology), Laboratories, Psychiatry, and Roentgenology. As in the Surgeon General's Office, the men who headed these sections were leaders in the medical community. Brigadier General John M. T. Finney from Johns

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<sup>55</sup>*The Surgeon General's Office*, 130, 326, 352.

<sup>56</sup>Memorandum reprinted in *The Surgeon General's Office*, 326.

Hopkins was the director of general surgery, Colonel Hugh H. Young was the director for urology, and Colonel Joseph F. Siler was the director for laboratories named in the initial circular.<sup>57</sup>

### **Professional Consultants, A. E. F.**

Director of Professional Services ----- Colonel William L. Keller

#### **Surgical Services**

Chief Consultant -----	Brig. Gen. John M. T. Finney
Surgical Research -----	Col. George W. Crile
Roentgenology -----	Col. Arthur C. Christie
Neurological Surgery -----	Col. Harvey Cushing
Orthopedic Surgery -----	Col. Joel E. Goldthwait
Ear, Nose and Throat Surgery -----	Col. James F. McKernon
General Surgery -----	Col. Charles H. Peck
Venereal and Skin Diseases and Genitourinary Surgery -----	Col. Hugh H. Young
Maxillofacial Surgery -----	Lieut. Col. Vilray P. Blair
Roentgenology -----	Lieut. Col. James T. Case
Ophthalmology -----	Lieut. Col. Allen Greenwood

#### **Medical Services**

Chief Consultant -----	Brig. Gen. William S. Thayer
General Medicine -----	Col. Thomas R. Boggs
Infectious Disease -----	Col. Warfield T. Longcope
Neuropsychiatry -----	Col. Thomas W. Salmon
General Medicine for Poisoning by Deleterious Gases -----	Lieut. Col. Richard Dexter
Cardiovascular Disease -----	Lieut. Col. Alfred E. Cohn
Tuberculosis -----	Lieut. Col. Gerald B. Webb
General Medicine -----	Maj. Franklin C. McLean

**Table 2: Professional Consultants, A. E. F.<sup>58</sup>**

As the medical support requirements changed, so did the division of professional services. One of the first changes was in dropping the name director and calling these men, consultants. This fit much better with their roles, as they had no directive powers, but served to advise the command on their particular specialties. General Order No. 88, G. H. Q., A. E. F., 6 June

<sup>57</sup>Circular reprinted in *Administration, A. E. F.*, 904.

<sup>58</sup>*Administration, A. E. F.*, 385.

1918 and Circular No. 25, A. E. F. reorganized the system of consultants, establishing chief surgical and medical consultants and increasing the total number of consultants.<sup>59</sup> The consultants and their specialties are listed in Table 2.

Many of these men are familiar from the discussion of the base hospital concept and its adoption. All had been active in preparing the medical community for war. Men such as Harvey Cushing, George Crile, Hugh Young, William S. Thayer had raised base hospitals at their universities that they accompanied to France. Joseph F. Siler had commanded Base Hospital No. 8 until November 1917. Again, the base hospitals had enabled the A. E. F. to provide excellent medical care, by bringing to France the finest physicians from universities throughout the United States. Without this available pool of specialists, medical care within the A. E. F. would have suffered.<sup>60</sup>

Headquarters for the professional services division was at Neufchateau. Although Keller had responsibility for organizing the consultant service, much of the job fell on Finney and Thayer who knew the physicians and surgeons from the civilian medical community better. The consultants supervised a vast number of facilities throughout the A. E. F. Because this number was too large for any one man to monitor effectively, the professional services division appointed consultants for each of the units, division and larger, as well as each hospital center and base section.<sup>61</sup>

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<sup>59</sup>*Administration, A. E. F.*, 351-358, Circular No. 25 is reprinted on 926. Historical Division, *General Orders*, 338. Historical Division, *Reports*, 416-17.

<sup>60</sup>*Administration, A. E. F.*, 351-358. *History of Base Hospital No. 18, American Expeditionary Forces*. (Baltimore: Base Hospital No. 18 Association, 1919), 17.

<sup>61</sup>Finney, *A Surgeon's Life*, 182-85

The consultants arranged for certain base hospitals to specialize in specific diseases. For example, Base Hospital No. 20 received many of the tuberculosis cases, while No. 8 and No. 25 were for neuropsychiatric cases. Other hospitals specialized in neurosurgical (Base Hospital No. 46), maxillofacial and ophthalmic (Base Hospital No. 115), or orthopedic injuries (Base Hospital No. 9). Specializing by hospital allowed the concentration of various scarce specialists at these hospitals. It also ensured that a patient with a rare injury would see a doctor trained in its treatment. Finally, it allowed the physicians to learn from their experience. One hundred cases spread out over fifty hospitals would give no hospital enough experience to change their methods for more successful ones. Concentrating those cases in a single hospital allowed analysis of results and improvement in methods.<sup>62</sup>

#### GAS CASUALTIES

The consultant for medicine specializing in gas poisoning, Lieutenant Colonel Dexter, was responsible for the care of gas casualties. There were three separate parts to his duties. First, was instruction of medical personnel in treatment of gas casualties. Circular No. 34, which described in detail treatment for the different types of gases, was distributed to every medical officer in the A. E. F. Lieutenant Colonel Dexter and his assistants gave lectures at the school for medical officers at Langres and in the divisions on gas treatment also.<sup>63</sup>

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<sup>62</sup>*Report of the Surgeon General, 1919, 1370-71, 1387-89. Administration, A. E. F., 357-58. Base Hospital N.9, A.E.F.: A History of the Work of the New York Hospital Unit during Two Years of Active Service: Written by the Padre, (New York: Privately published, 1920), 73. On Active Service with Base Hospital 46, U.S.A., Mar. 20, 1918 to May 25, 1919, (Portland, OR: Arcady Press, 1919(?)), 61. Circulars No. 33, 35, 50, reprinted in Administration, A. E. F., 939-941, 945-948, 979-981, show the designation of certain hospitals for certain injuries. Administration, A. E. F., 629-748 provides brief histories of all the base hospitals.*

<sup>63</sup>Charles E. Heller, *Chemical Warfare in World War I: The American Experience, 1917-1918*, Leavenworth Papers No. 10. (Fort Leavenworth, KS: Combat Studies Institute, United

The second duty was the establishment of special gas hospitals. In this, he worked closely with Colonel Harry L. Gilchrist, the Medical Director of the Gas Service in the A. E. F. Gas casualties, in particular, recovered better when they went to hospitals specializing in their care. These soldiers required early care and treatment for their injuries, so one field hospital in each division received augmentation to become a gas hospital. Similarly, special hospitals cared for the gas patients when they were evacuated to the rear. First Army set up five separate gas hospitals in the Meuse-Argonne offensive. Frederick Pottle described the mustard gas patients as the "most painful we had to witness in all our service." His hospital only cared for these patients in the fighting at Belleau Wood, before the establishment of the separate gas hospitals. He was grateful to care for only a few gas casualties after that engagement.<sup>64</sup>

The third duty was to supervise the treatment of the gassed patients. This duty initiated several changes in the system. The gas hospitals were often isolated and far from the railroad, making evacuation of patients difficult. The staffs were brought together just before an operation, which prevented them from training together. Colonel Gilchrist and Lieutenant Colonel Dexter changed this, so that specific evacuation hospitals became gas hospitals and evacuated their patients to special base hospitals. They also started a program to assign each division a medical officer responsible for

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States Army Command and General Staff College, 1984), 53-55. Circular No. 34 reprinted in *Administration, A. E. F.*, 941-945. *Administration, A. E. F.*, 382-85.

<sup>64</sup> Heller, *Chemical Warfare in World War I*, 53-55. Frederick Pottle, *Stretchers, The Story of a Hospital Unit on the Western Front*, (New Haven: Yale University Press, 1929), 117-18. *Administration, A. E. F.*, 382-85.

supervising the care of gas patients in the division. The division medical gas officers improved the care of the gas casualties in their divisions.<sup>65</sup>

#### ASSESSMENT OF THE CONSULTANT SYSTEM

The consultant system proved extremely successful. The Chief Surgeon's office expanded it down to hospital centers, armies, corps, and even divisions. This helped ensure that the hospital centers and the hospitals in the zone of the advance followed the recommendations of the senior consultants. The division surgeons and other medical officers benefitted greatly from the work of the consultants. Jay W. Grissinger, in his articles for *Military Surgeon*, on his duties as 42d Division, First Corps, and Third Army surgeon spent a page discussing their "sterling worth" and "splendid service." He felt the "system...was a wise one and should by all means be perpetuated."<sup>66</sup>

The memoirs of their time in the A. E. F. provide some insight into the consultants. One of the true characters of the group was Hugh Young. Young had helped organize Base Hospital No. 18, the Johns Hopkins Unit. He volunteered to study urological problems in the British and French systems. The Surgeon General accepted his offer and Young and three assistants travelled to Europe with General Pershing on board the *Baltic*. Interestingly, Young and his three assistants were the only ones in uniform when the ship left New York. Pershing and his party had worn civilian attire to confuse any German spies. Young had never gotten the word until Harbord accosted him on board the ship.<sup>67</sup>

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<sup>65</sup>Heller, *Chemical Warfare in World War I*, 53-55. *Administration, A. E. F.*, 382-85. General Order No. 144, 29 August 1918 in Historical Division, *General Orders*, 432.

<sup>66</sup>Jay W. Grissinger, "Field Service," *Military Surgeon* 61 (November 1927): 590-91.

<sup>67</sup>Hugh H. Young, *Hugh Young: A Surgeon's Autobiography*, (New York: Harcourt, Brace and Co., 1940), 264-69.

He recovered from that awkward beginning and gave Pershing and his staff several "terrifying" lectures on venereal disease. Pershing attached great importance to combatting venereal diseases, as they had caused many problems on his expedition into Mexico. From this briefing, Young received Pershing's backing to do all he saw fit to prevent this scourge from destroying the health of the force. Young instituted a policy of treatment at the unit rather than in hospital, coupled with a vigorous program of education, condom distribution, and prophylaxis (irrigation of the penis with an antiseptic solution after a soldier had had sexual intercourse). Young dealt with the venereal problem effectively, but with humor. When questioned by a Regular Army Medical Corps Colonel as to what he was there for, Young replied, "To keep the underworld safe for democracy."<sup>68</sup>

A good-natured rivalry existed between the consultants. Each one had a mess at the headquarters at Neufchateau. Young recalled that many of the younger men dined at his rather than eat at Finney's, who was the son of a minister, or Goldthwait's, who had vigorous prayers before and after the meal. Crile and Cushing also had a rivalry. Cushing was known for his slow, meticulous surgery. Crile recalled visiting a hospital where Cushing was operating and having the younger men complain that Cushing's deliberateness was too slow for battle conditions. Crile told them simply to let Cushing operate at his own pace, but that they needed to keep up with the rest of the cases, in essence ignoring their chief.<sup>69</sup>

The consultants provided important services for the doctors throughout the A. E. F. Crile performed important work on shock, transfusion, and

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<sup>68</sup>Young, *Hugh Young*, 270-79, 281. Harbord, *The American Army in France*, 71, 73.

<sup>69</sup>George W. Crile, *An Autobiography*, edited with sidelights by Grace Crile, 2 Vol., (Philadelphia and New York: Lippincott, 1947), 285. Young, *Hugh Young*, 270-79, 323-24.

surgical infections that saved many lives. Longcope and Thayer worked on the influenza problem. The work in venereal disease by Young kept the rate for the A. E. F well below that of any of the other Allies. The concentration of all the specialists together at Neufchateau allowed a fertile exchange of ideas and solutions that benefitted all. Perhaps the best proof of the success of the organization is that consultants in various specialties are still in use in 1991. Clearly, only a successful system survives that many changes.

#### HOSPITAL UNITS FOR THE A. E. F.

The chief of the Hospitalization Division had to provide medical care for the vast numbers of arriving troops with the hospital units available. The early organization of base hospital units by the Red Cross allowed these units to get to France rapidly. Of the twenty hospitals organized in 1916, ten went to France in 1917. Of the eleven organized in 1917 from January to April, eight went overseas in 1917. In contrast, one evacuation hospital reached France in December 1917. This hospital was organized in October 1917.<sup>70</sup>

Some problems did occur in mobilizing the Red Cross hospitals. First, these were purely civilian organizations and did not always adapt rapidly to the demands of military life. They had no prior knowledge of Army procedure, so that they did not know how to requisition equipment and other necessities. The lack of a specific medical mobilization camp also handicapped hospital mobilization. The units did overcome these problems and, as shown, did get overseas rapidly.<sup>71</sup>

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<sup>70</sup>Center of Military History, United States Army, Order of Battle of the United States Land Forces in the World War, Zone of the Interior: Directory of Troops, Volume 3, Part 3 (Washington, D. C.: U.S. Government Printing Office, 1949), facsimile reprint (Washington, D. C.: U.S. Government Printing Office, 1988), 1429-55.

<sup>71</sup>*The Surgeon General's Office*, 326.

Despite the rapid arrival of base hospital units into France, the number remained woefully inadequate. The estimates based on British and French experience required hospital beds equal to 15 per cent of the troops. American estimates were higher, because the Allies could evacuate convalescent soldiers home, while the Americans had to remain in theater. The section on the Personnel Division covers the shortage in personnel and units that severely hampered medical care. The Surgeon General's Office and the Chief Surgeon's office made adjustments with the material that they had on hand. Because the Red Cross Base Hospitals arrived early in France, most of the adaptation involved these units.<sup>72</sup>

First, all the base and evacuation hospitals, which had originally had 500 beds, expanded to 1000 beds. This expansion increased the number of medical officers to 35 from 26, the nurses from 65 to 100, and the enlisted men from 150 to 200. Only some of the base hospitals received these additional personnel, most of those that did got them from the Red Cross Hospital Units, which were raised in much the same manner as the base hospitals, but from smaller hospitals that could not raise a larger unit.<sup>73</sup>

#### HOSPITAL FACILITIES FOR THE A. E. F.

A second problem was where to put these hospitals. The French and British had taken over any suitable hospital building in the years of fighting before the Americans arrived. Wadhams had to work closely with the French before the troops arrived to find any buildings that the Army could convert into hospitals and to construct new hospitals when no acceptable facility was

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<sup>72</sup>Historical Division, *Reports*, 400-01.

<sup>73</sup>*The Surgeon General's Office*, 99-100, 326. Wadhams and Tuttle, "Early Problems," 659-60.

available. He travelled around France with Colonel Castelli of the French Army to decide which French hospitals could be turned over to the Americans. When Bradley arrived in France, he made the same trip to assess hospitalization. The Hospitalization Division estimated that a force of 500,000 men would require 125,000 beds. General Pershing initially authorized 73,000 hospital beds for a force of 300, 000. The French *Service de Santé* transferred hospitals with 6,250 beds by 20 September 1917. Construction started on the new hospitals, with 40,000 beds planned for the Intermediate Section, 20,000 in the Base Section and the rest in the Advance Section.<sup>74</sup>

Because new construction took about six months to become available, the Medical Department took over hotels and other buildings and turned them into hospitals. Many of these buildings required extensive alterations as well. Hotels, especially, created difficulties because they had numerous halls, small rooms, and many stairs. The Americans and the French completed the alterations more quickly than they could construct new hospitals. Complicating the construction was a lack of adequate building materials overseas, so most of the building materials came from the United States. Tuttle performed the important task of designing the plan for the barracks hospitals constructed. He designed two different types of hospitals. Type A was a 1000 bed (expandable to 2000) base hospital, while type B was a 300 bed (also able to be doubled) camp hospital.<sup>75</sup>

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<sup>74</sup>Letter, W. D. Conner to Chief, French Military Mission, A.S.G.S., 1 November 1917 reprinted in *Administration, A. E. F.*, 299-300. Historical Division, *Reports*, 384-85. Wadhams and Tuttle, "Early Problems," 656-57.

<sup>75</sup>*Administration, A. E. F.*, 251-280. Wadhams and Tuttle, "Early Problems," 656-59. *Report of the Surgeon General, 1919*, 1338-39.

The shortage of adequate hospital buildings plagued the A. E. F. throughout the war. In February 1918, there were six combat divisions in France and approximately 250,000 American soldiers. At this time, there were 11,000 normal (non-emergency) hospital beds with approximately 5000 patients in hospital. The Hospitalization Division had ordered over 73,000 beds built by this time. The situation became so bad that Pershing wrote a letter to Premier Georges Clemenceau on 16 August 1918, requesting his assistance in getting suitable hospital buildings for the influx of troops for the upcoming offensives.<sup>76</sup> The construction program simply took too long to build sufficient hospitals given the short time allowed.<sup>77</sup>

#### SHORTAGE OF HOSPITAL BEDS

There were three reasons that there were barely adequate numbers of hospital beds in France for the A. E. F. First was the inability to get sufficient hospital units over to Europe because of the priority schedule on shipping. Second, the sanitary estimate was too low. Finally, hospital construction progressed too slowly. Table 3 shows the increase in normal beds, emergency beds, and beds occupied during 1918 from the end of month totals. Emergency beds were hospital beds set up in tents, hallways, and anywhere else a bed could fit; they had minimal nursing care available. As the war progressed and the casualties mounted, the medical planners became increasingly anxious. McCaw, in his report after the war states,

Had hostilities continued much longer and casualties occurred at the same rate, the American Expeditionary Forces would have been confronted with the situation of having on its hands more patients than could possibly been hospitalized.<sup>78</sup>

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<sup>76</sup>Reprinted in *Administration, A. E. F.*, 280.

<sup>77</sup>Wadhams and Tuttle, "Early Problems," 656-59.

<sup>78</sup>*Report of the Surgeon General, 1919*, 1453.

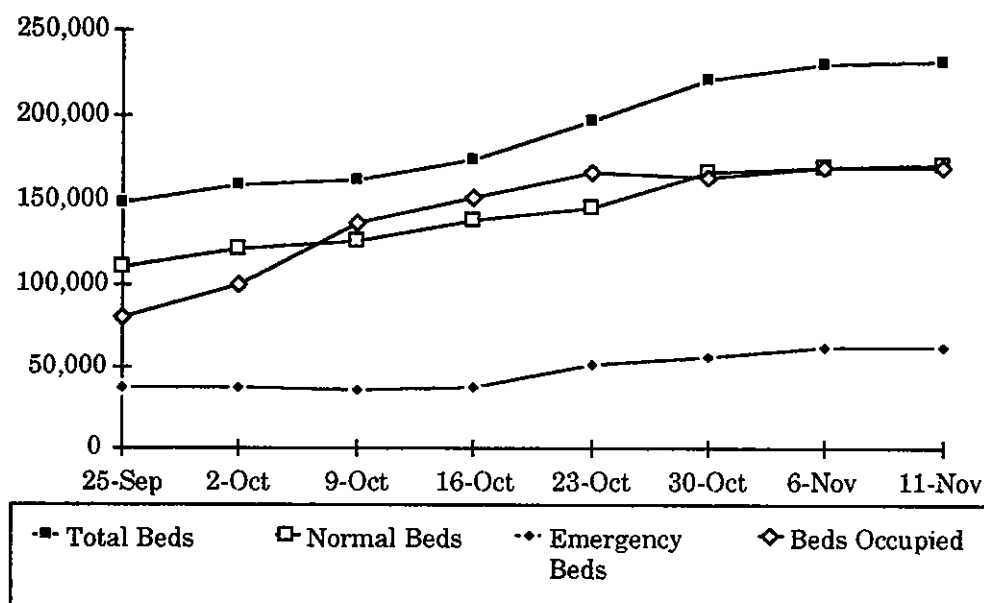
Date	Total Beds	Normal Beds	Emergency Beds	Beds Occupied
Jan 1918	9,377	9,377	0	5,091
Feb 1918	10,694	10,694	0	4,960
Mar 1918	22,125	22,125	0	10,723
Apr 1918	28,090	28,090	0	11,115
May 1918	37,086	33,077	4,009	15,336
Jun 1918	42,815	39,713	3,102	22,905
Jul 1918	75,793	58,687	17,106	42,470
Aug 1918	102,144	90,204	11,940	54,485
Sep 1918	148,596	110,953	37,643	79,580
Oct 1918	221,421	166,534	54,887	163,767
Nov 1918	233,092	171,830	61,262	169,235

**Table 3:** Hospital Beds in the A. E. F.<sup>79</sup>

Figure 3, which charts the weekly hospital bed statistics, shows the role played by the emergency beds more clearly than the end of month statistics in Table 3. By 10 October, there were more patients in hospitals than the normal bed capacity. There were approximately 20,000 more patients than normal hospital beds by 23 October. Base hospitals in particular had only emergency beds vacant. On 31 October 1918, there were 163,767 beds occupied. At this time, there were only 166,534 normal beds available. Slightly wounded and convalescing soldiers filled 32,278 emergency beds which gave the Medical Department 35,045 empty normal beds to continue giving quality medical care. As Table 4 shows, these empty normal beds were concentrated in the Advance Section by overloading the

<sup>79</sup>*Report of the Surgeon General, 1919, 1450.*

Base Sections. This provided the most vacant beds for the battle casualties who were the patients needing the most acute care.<sup>80</sup>



**Figure 3: Hospital Beds in the A. E. F., September to November 1918<sup>81</sup>**

The situation worsened starting in September from a combination of two factors. The Allies had started their offensives, with the Americans reducing the Saint Mihiel salient. In October and November was the Meuse-Argonne offensive, the largest of the war for the Americans. Offensive operations resulted in large numbers of casualties. At the same time, the influenza epidemic swept through the A. E. F. Thousands of soldiers became ill; many required hospitalization. Disease stressed the system that barely coped with the battle casualties. The system of emergency beds and the

<sup>80</sup>Report of the Surgeon General, 1919, 1450. *Administration, A. E. F.*, 312-313. Hagood, *The Services of Supply*, 344-345.

<sup>81</sup>Report of the Surgeon General, 1919, 1450. *Administration, A. E. F.*, 312-313. Hagood, *The Services of Supply*, 344-345.

hospital staffs working twelve to eighteen hour shifts enabled the Medical Department to cope.<sup>82</sup>

	Occupied		Vacant		Normal		Emergency	
	Base	Camp	Base	Camp	Base	Camp	Base	Camp
Advance Section	22,521	3,425	20,463	2,622	42,472	5,616	58,050	6,411
Intermediate Section	69,802	6,226	5,198	2,360	52,624	7,527	98,993	7,709
District of Paris	11,683	0	677	0	8,306	0	12,498	0
Base Section Total	49,770	6,878	5,196	2,818	43,974	9,339	61,215	9,388
Totals	153,776	16,529	31,534	7,800	147,376	22,482	230,756	23,508

**Table 4:** Hospital bed status on 7 November 1918<sup>83</sup>

The actual numbers of beds tell only part of the story. The hospitals expanded well beyond their normal capacity to provide the normal and emergency beds listed. With no additions to the staff, and with teams sent off to the front, the normal beds were terribly understaffed. For example, Base Hospital No. 6 expanded to a normal capacity of 3,000 beds. The most patients at any one time was 4,319 at the armistice. Base Hospital No. 19 had 3,629 normal beds and 485 emergency ones scattered in twenty-two separate hotels.<sup>84</sup>

<sup>82</sup>*Report of the Surgeon General, 1919*, 1453. *Administration*, A. E. F., 312-313.

<sup>83</sup>From *Administration*, A. E. F., 314. The emergency capacity includes normal beds.

<sup>84</sup>[George Clymer], ed., *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*, (Boston: Privately published, 1924), 8. John M. Swan and Mark Heath, *A History of United States Army Base Hospital No. 19, American Expeditionary Forces, Vichy, France APO 781*, (Rochester: Wegman Walsh Press, Inc., 1922), 54-55.

## HOSPITAL CENTERS

One important addition was the creation of the hospital center. As has been shown, medical personnel were in extremely short supply throughout the war. It became obvious that hospitals would have to expand quickly their capacities to meet peak patient loads. Wadhams and Tuttle realized that this expansion would have to occur without any major increase in personnel. Therefore, they decided to group the base hospitals together in hospital centers. This allowed a reduction in the number of administrative personnel as duties could be shared, as well as decreasing overhead. Combining two to twenty base hospitals with a convalescent camp meant that the hospitals could rapidly move their convalescent patients out of acute-care beds and have these patients available to help with non-technical work.<sup>85</sup>

## AUGMENTATION FROM THE BASE HOSPITALS

The Hospitalization Division had problems in staffing many of its hospitals, as well. The main source of manpower available to the Chief Surgeon was the Red Cross Base Hospitals. These were often broken up to staff the camp and other hospitals that formed overseas without assigned personnel. At one time, Base Hospital No. 34 had virtually ceased to exist; its personnel were serving in eleven separate camp hospitals. Adequate numbers of casual medical personnel did not start to arrive until October 1918. Until then, the base hospitals filled in. The number of the different types of hospitals in France in July 1918, when the Allies began their

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<sup>85</sup>*Report of the Surgeon General, 1919*, 1340-41. Historical Division. *Reports*, 419, *Administration, A. E. F.*, 253-57.

offensive, demonstrates the importance of the Red Cross Units. Of the forty-two base hospitals overseas, thirty-six were Red Cross units.<sup>86</sup>

The officers, nurses, and men to form the mobile hospitals also came from the base hospitals. The mobile hospital was a formation adapted from the French and British. Because it was not on the Army Tables of Organization, its staff had to come from units already in theater. Five of the first six mobile hospitals received their staff from base hospitals serving with the British. Thus, Base Hospital No. 2 staffed Mobile Hospital No. 2; Base Hospital No. 4 staffed Mobile Hospital No. 5; Base Hospital No. 5 staffed Mobile Hospital No. 6; Base Hospital No. 10 staffed Mobile Hospital No. 8; and Base Hospital No. 21 staffed Mobile Hospital No. 4. The section on organization of medical support will discuss the role of these units, but the Hospitalization Division could never have formed them without the base hospitals in France.<sup>87</sup>

#### SURGICAL TEAMS FROM THE BASE HOSPITALS

The base hospitals provided the personnel for other shortfalls. By July 1918, only eight of the fifty-two evacuation hospitals called for by doctrine had arrived in France. These hospitals represented the first medical units behind the division and provided most of the life-saving surgery and shock treatment. The Medical Department, A. E. F. made up this shortfall by using

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<sup>86</sup>*Report of the Surgeon General, 1919*, 1340-41. Historical Division, *Reports*, 419, *Administration, A. E. F.*, 253-57. [Pitts, Edmund M., William T. Bauer, and Malcolm G. Sausser], *Base Hospital 34 in the World War*, (Philadelphia: Lyon and Armor, 1922), 27-28. *The Surgeon General's Office*, 102.

<sup>87</sup>Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 402-03. Crile, *Autobiography*, 348. U.S. Army, A.E.F. Base Hospital No. 4, *Album de la Guerre*, (Cleveland: Scientific Illustrating Studios, 1919), 19-24 U.S. Army, A.E.F. Base Hospital No. 10, *History of the Pennsylvania Hospital Unit (Base Hospital No. 10, U.S.A.) in the Great War*, (New York: P. B. Hoebner, 1921), 94-95. Historical Division, *General Orders*, 313-14.

professional teams to augment the evacuation hospitals. The idea for these teams came from the French who had depended on similar teams to reinforce the areas of heaviest casualties. The vast majority of surgeons, nurses, and men came from the base hospitals. Table 5 shows the degree that the base hospitals provided soldiers for these teams. The table is misleading, because approximately 200 teams from the base hospitals did most of the work.<sup>88</sup>

**Professional Service Teams as of 31 December 1918**

		Total Personnel
Operating Teams from Base Hospitals	244	1,708
Operating Teams, Casual	95	475
Splint Teams	30	90
Shock Teams	78	390
Totals	447	2,662

**Table 5: Professional Services Teams in the A. E. F.<sup>89</sup>**

These teams markedly increased the capabilities of the evacuation hospitals. Evacuation Hospital No. 6 had twenty-nine different professional teams attached at various times to augment the four surgical teams it had of its own. The hospital's original roster included twenty-one officers, twenty-four nurses and 179 soldiers. During the war it had over one hundred others attached to carry out its mission. Evacuation Hospital No. 15 kept thirteen operating tables busy during the Meuse-Argonne offensive with the nine surgical, splint, and emergency treatment teams attached to it.<sup>90</sup>

<sup>88</sup>*Report of the Surgeon General, 1919*, 1487. Historical Division, *Reports*, 417.

<sup>89</sup>From *Report of the Surgeon General, 1919*, 1487, and Historical Division, *Reports*, 417.

<sup>90</sup>*The History of Evacuation Hospital Number Six United States Army 1917-1919*, (Poughkeepsie, N. Y.: Privately published, 1931), 18, 38. Walter J. Bachman, *Souvenir Roster and History of Evacuation Hospital No. 15 with The Story of Verdun and the Argonne Drive*, (Privately published, 1919), 29-30.

The consultant for General Surgery sent a letter to all base hospitals requiring them to organize two surgical teams each. These teams had a surgeon, an assistant, two nurses, and two orderlies. The demand for these teams was great. A 30 July memorandum from the Chief Surgeon, A. E. F. to the A. C. S., G-4 complained that the base hospitals lost their surgical staff just when the demand for its services was greatest. Base Hospital No. 18, for example, had only one surgeon for over a month during the late summer and early fall of 1918. That these hospitals continued to function well is a tribute to the spirit and ability of their staffs.<sup>91</sup>

#### ORGANIZATION OF MEDICAL SUPPORT

Support doctrine divided the campaign theater into three zones, the zone of the advance, the intermediate zone, and the zone of the lines of communication. The *Field Service Regulations* of 1914 established the medical organization in the zone of the advance. The regulations list three missions for the "Sanitary Service." These were instituting sanitary measures to prevent disease, temporary care of the sick and wounded and their transportation to the line of communication, and medical supply.<sup>92</sup> The regulations divide personnel into two groups: those assigned to the regiments or smaller units and those assigned to the sanitary train. (See Figure 4.) The soldiers assigned to the regiments and smaller units accompanied their units into combat and were commanded by the unit commander. Those assigned to the sanitary train worked for the division surgeon, who worked directly for the division commander. Personnel assigned to the regiments helped the unit

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<sup>91</sup>*Report of the Surgeon General, 1919*, 1291. *History of Base Hospital No. 18*, 21. 99-100.

<sup>92</sup>War Department, *Field Service Regulations, United States Army 1914*, Washington, D.C.: Government Printing Office, 1914), 136-143.

commanders fulfill their responsibilities for the enforcement of sanitary regulations and the maintenance of sanitary conditions in their commands.<sup>93</sup>

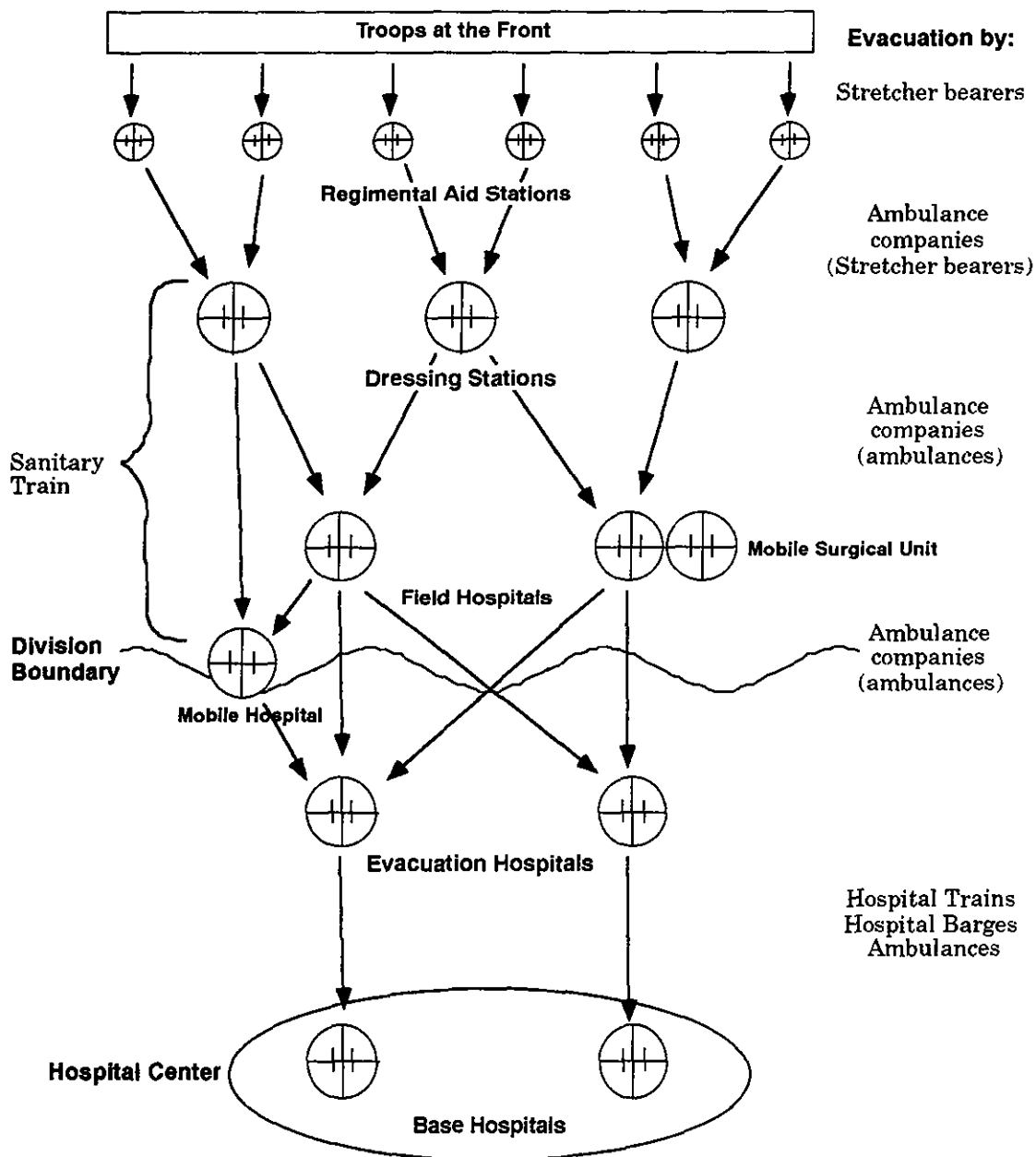
#### CARE AT REGIMENTAL MEDICAL LEVEL AND BELOW

The doctrine can be understood best by tracing the wounded through the medical system in the zone of the advance. Medical care started with the individual soldier. He carried a first-aid packet to use on himself or his comrades. The sanitary detachments next came to the aid of the wounded to apply bandages and splints for first aid and administer stimulants. The sanitary personnel carried the wounded to the regimental aid station where they received emergency medical treatment. The regimental aid station provided little more than a collection point for the wounded. The regimental surgeon or other responsible officer performed triage here. This enabled the ambulances to take the patient directly to the appropriate hospital. The regimental aid station functioned under two major constraints. First, the regimental combat trains carried a limited amount of matériel, so the aid station had only limited supplies. Second, the aid station had to move with its regiment; if it got involved in providing long and detailed care, it could not move. The aid station personnel divided the patients into three groups, the slightly wounded who returned to the line, the ambulatory who went to the station for the slightly wounded, and the litter patients who were carried to dressing stations by litter bearers from the sanitary train.<sup>94</sup>

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<sup>93</sup>Ibid., 138. United States War Department, *Manual for the Medical Department, United States Army, 1916. Corrected to June 15, 1918*, (Washington, D.C.: Government Printing Office, 1918), 201-205.

<sup>94</sup>*Field Service Regulations*, 138. *Medical Department Manual*, 205-07, 15.



**Figure 4:** The evacuation system from the front line to the base hospitals

There was a constant shortage of personnel at the regimental level. This occurred as much from a shortage in the Table of Organization as from failure to fill slots. The regimental medical detachment had only fifty-five officers and men to care for the 3,600 men in the regiment. With this small

number, the medical detachment needed to evacuate the wounded to the aid station, apply dressings and splints and prepare the patient for further evacuation. The two litter-bearers assigned to each company were clearly too few for the casualties expected. To make up for this shortage, many of the corps and divisions ordered eight to twelve infantrymen be taken from each rifle company to serve as litter-bearers. Heavy bombardment, such as during the German offensive at the second battle of the Marne, worsened this shortage because the long distance back to the ambulances meant more men had to be carried and the litter-bearers tired more readily.<sup>95</sup>

#### DIVISIONAL MEDICAL CARE

Ambulance companies established dressing stations to the immediate rear of the regimental aid stations. They evacuated the patients from the dressing stations to the field hospitals. In camp, they supplied the equipment for the infirmary service. At the dressing stations, the wounded received nourishments, stimulants, new dressings, and emergency surgery. The ambulance companies then transported these patients back to field hospitals. The dressing stations were from the sanitary train and came under the division surgeon and not the regimental commander. They remained mobile and close to the regimental aid stations that they supported.<sup>96</sup>

The field hospitals, located three to four miles from the front lines, were the next portion of the sanitary train. They provided protection from the elements and more complicated treatment than the dressing stations or aid stations. They were not as mobile as the dressing stations for they might

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<sup>95</sup>Rhoads, "Principles of Evacuation, I., 132-133. T. L. Rhoads, "Principles of Evacuation, II. Division Evacuation," *Military Surgeon* 54 (March 1924): 296-300. *Field Operations*, 105-110.

<sup>96</sup>*Field Service Regulations*, 138-39. *Medical Department Manual*, 207-14.

have to hold on to patients for some time and had several tents. The field hospital needed to move with its division, so it depended on the ambulance companies to keep it from getting overloaded with patients. The average field hospital with a capacity of 216 patients provided stabilization and life-saving intervention to enable further safe evacuation of the wounded. It was the final medical unit assigned to the division.<sup>97</sup>

The field hospitals had changed from the demands of trench warfare. Many of these changes resulted from studying the French and British medical systems. It soon became apparent that gas victims did best when they went to a hospital that specialized in treating them. One of the field hospitals acquired gas treatment teams and specialized in treatment of gas casualties. Similarly, if the field hospitals acquired patients who were too sick to transport, they could not move with their division. So, a second field hospital received a new unit, the mobile surgical unit. This unit contained extra bedding, sterilization, X-ray, and surgical equipment. It allowed the hospital to which it was attached to treat the patients who were too severely injured to be evacuated. The other two field hospitals did not change, but were better able to respond to battlefield conditions as they no longer had the burdens of non-transportable or gas patients.<sup>98</sup>

The mobile hospital filled the gap between the field hospitals and the evacuation hospitals. The evacuation hospitals needed to be near a railhead, because they had to evacuate rapidly the stabilized patients or they would quickly overload. Unfortunately, often the field hospitals were a long distance from the railheads. The French developed the *Auto-chir* or mobile

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<sup>97</sup>*Field Service Regulations*, 138-39. *Medical Department Manual*, 211-15.

<sup>98</sup>*Report of the Surgeon General, 1919*, 1464-68. Historical Division, *Reports*, 418-19. *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 659-61.

hospital, which treated those patients that were beyond the capabilities of the field hospitals, but could not survive a long ambulance ride to the evacuation hospital. The A. E. F. created twelve of these units, which were under the control of the army surgeon. They were completely transportable and could be set up or taken down in only a few hours. These units gave the army or corps surgeon the ability to adjust on short notice the treatment capabilities in a division's sector to meet the changing demands of combat.<sup>99</sup>

#### CARE BEHIND THE DIVISION

Behind the Zone of the Advance lay the Lines of Communications. (See Figure 5) The Lines of Communications contained an advance section, a base section, and, when necessary, an intermediate section. In the line of communications, the sanitary service had four missions: to provide treatment facilities for the sick and wounded, to evacuate the sick and wounded, to provide medical supply, and to provide preventive medicine services and sanitary conditions.<sup>100</sup>

#### EVACUATION HOSPITALS

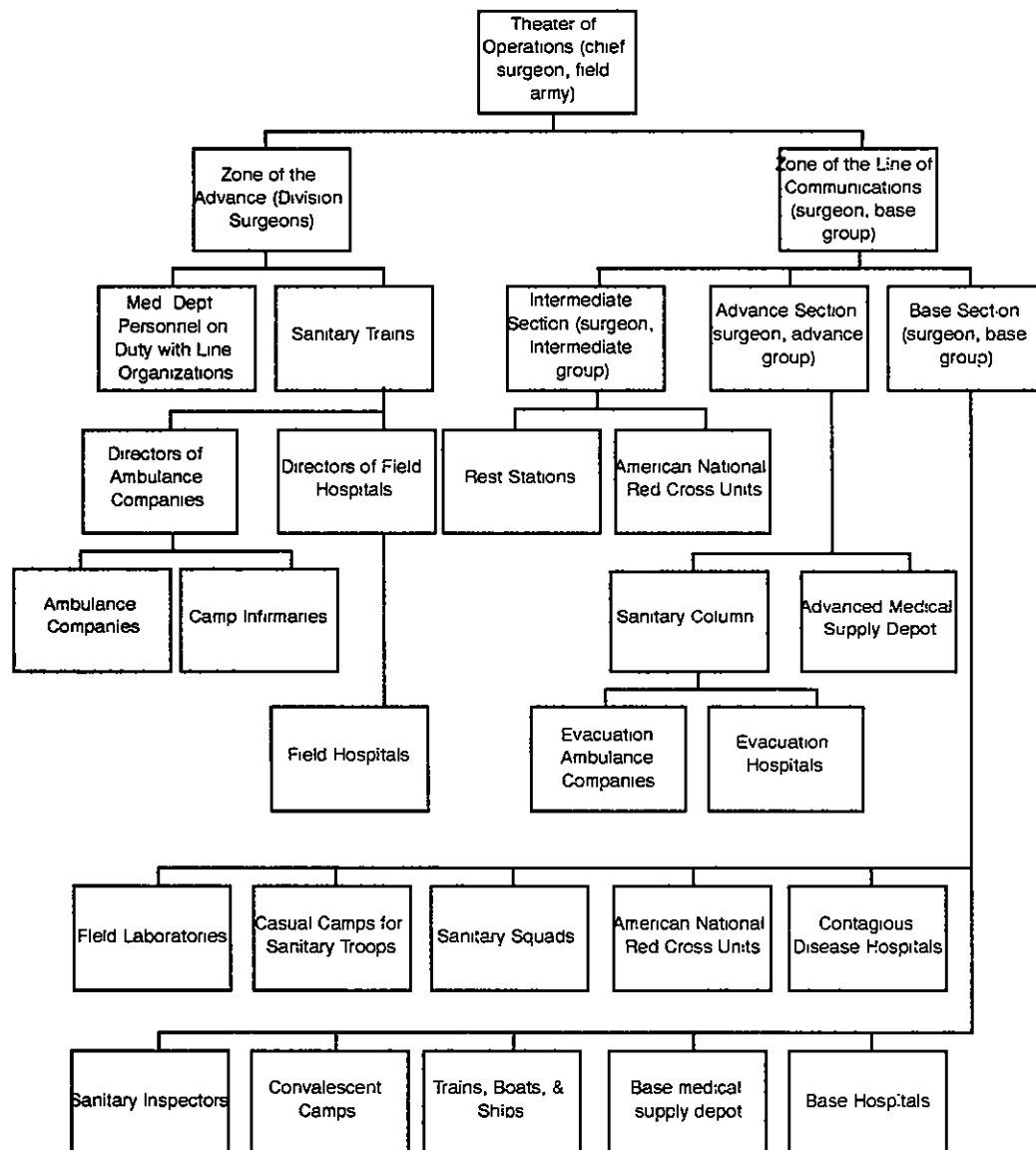
Closest to the front were the evacuation hospitals. Doctrine assigned each division in the advance section, two evacuation hospitals and one evacuation ambulance company. Their mission was to receive the patients from the field hospitals, freeing them so they could move with the division. The evacuation hospital provided emergency surgery and stabilization for the

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<sup>99</sup>*Report of the Surgeon General, 1919*, 1465. Historical Division, *Reports*, 418-19, *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 660. Historical Division, *General Orders*, 313-14.

<sup>100</sup>*Medical Department Manual*, 224.

wounded with a capacity of 432 patients. It evacuated its patients as soon as practical to avoid getting overloaded.<sup>101</sup>



**Figure 5:** Organization of the Medical Department–Theater of Operations<sup>102</sup>

The evacuation hospitals were the mainstay of resuscitation and initial treatment for the combat soldiers, serving as important relay stations

<sup>101</sup>*Medical Department Manual*, 231-32.

<sup>102</sup>Based on *Field Service Regulations*, 138-39, and *Medical Department Manual*, 207-14.

between front-line and base hospitals. Under the original doctrine, these hospitals belonged to the L. O. C.. This meant that they could not respond as readily to the demands of the line. The attitude of many of the line officers worsened this problem as they felt that medical units did not need to know of upcoming combat operations. To make the evacuation hospitals more responsive to the combat unit's needs, the Chief Surgeon had the commander-in-chief reassign them to the armies. This allowed the closer coordination necessary for them to function best.<sup>103</sup>

#### BASE HOSPITALS

The evacuation hospitals sent patients back to the base hospitals. The base hospitals had a capacity of 500 patients. The Army planned for one base hospital for each 20,000 soldiers.<sup>104</sup> Base hospitals performed definitive treatment, having the necessary specialists and nursing staff. The only patients sent further to the rear from the base hospitals were those requiring specialty care not available and those permanently disabled. When required by the tactical situation, base hospitals could function as evacuation hospitals, evacuating to base hospitals further back to make room for new patients.<sup>105</sup>

The hospitals in the Justice Hospital Center at Toul all served as evacuation hospitals during the St. Mihiel offensive of September 1918. The hospital center at Bazoilles , approximately 60 miles behind the lines during September and October 1918, filled a similar role. The shortage of evacuation hospitals forced these hospitals to modify their care. During September and

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<sup>103</sup>*Report of the Surgeon General, 1919*, 1466. *Administration*, A. E. F., 285.

<sup>104</sup>Munson, "Red Cross," 200.

<sup>105</sup>*Medical Department Manual*, 225-27 .

October 1918, these hospitals evacuated 16,552 and 31,777 patients, respectively, to base hospitals in the intermediate and base sections.<sup>106</sup>

#### PATIENT EVACUATION

The Hospitalization Division also had responsibility for the evacuation of the sick and wounded. The evacuation system also evolved over the course of the war. It suffered under the same constraints of lack of personnel and equipment that the rest of the Medical Department dealt with. Although evacuation tended to follow doctrine when possible, the shortages of trained medical officers, nurses, and soldiers forced changes on doctrine. These changes occurred at every level of the organization. Other changes resulted, because each division surgeon interpreted the *Manual for the Medical Department* and the *Field Service Regulations* differently. Methods sometimes differed from regiment to regiment in a division.<sup>107</sup>

From the aid station, the ambulance company of the sanitary train evacuated the patients. To speed evacuation, the company would establish an ambulance head only 800 to 1,500 yards behind the front line, where a small number of ambulances would wait for wounded. When conditions allowed, these ambulances might even come up to the battalion aid stations to remove patients and spare the litter-bearers. The 30th Regiment (Third Division) was typical in setting up its battalion aid stations where the ambulances could reach them. They found that the number of patients removed by litter doubled when the ambulances could not reach the aid stations. The rest of the ambulances would remain with the ambulance

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<sup>106</sup>*Field Operations*, 285. *History of Base Hospital No. 18*, 21.

<sup>107</sup>T. L. Rhoads, "Principles of Evacuation, I. The Comprehensive Plan," *Military Surgeon* 54 (February 1924): 131-33. *Field Operations*, 94-95, 105-149, 251-53. Wadhams and Tuttle, "Early Problems," 654-55.

company headquarters about a mile further back. The ambulance companies in reserve waited at an ambulance park further back along the main supply route.<sup>108</sup>

The divisions did not like the horse-drawn ambulances. Although the 1st Division Surgeon found that these ambulances allowed him to treat a patient in the moving ambulance and return him to duty while on the march, others did not see these advantages. The 26th Division Surgeon felt quite differently when he stated in his report, "Here was shown the uselessness of the horse-drawn as compared to motor transportation."<sup>109</sup> Jay W. Grissinger, the division surgeon for the 42d Division in the early part of the war recalled that all he had initially were twelve horse-drawn ambulances, he found them worthless, because of the distance to be covered and their slow speed. The Artillery regiments most often had the horse-drawn ambulances assigned, but all units tried to get the motorized ones when possible. This changed in the Meuse-Argonne operation. The roads became impassable behind the advancing troops and only the horse-drawn ambulances could get through to the battalion and regimental aid stations.<sup>110</sup>

The ambulance companies brought the patients to the field hospitals or the mobile surgical hospitals that supported the division. The mobile surgical hospital treated the desperately wounded who could not tolerate further transportation. These patients were less than one per cent of the total number of casualties. The mobile surgical hospitals had their patients moved

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<sup>108</sup>Rhoads, "Division Evacuation," 296-97. *Field Operations*, 105-110.

<sup>109</sup>Both reports are reprinted in part in *Field Operations*, 94-95.

<sup>110</sup>*Field Operations*, 94-95. Jay W. Grissinger, "Field Service," *Military Surgeon* 61 (September 1927): 306, (October 1927): 464. *Field Operations*, 594-598.

to the evacuation hospitals as soon as they were able. This freed the surgical hospital to move where it was most needed.<sup>111</sup>

#### AMBULANCE EVACUATION

Doctrine called for the corps and army ambulance companies to evacuate from the field and mobile surgical hospitals. These companies were to be organized only in time of war, so none were available when the A. E. F. first deployed to France. The *Manual for the Medical Department* called for these evacuation ambulance companies to have twelve ambulances per section. Surgeon General Gorgas on the recommendation of the Chief Surgeon, A. E. F., Bradley, increased this to twenty. Winter, as surgeon for the L. O. C., argued strongly for centralized ambulance companies for this duty, rather than piece-mealing them out to the divisions and corps. He recommended the organization of the first evacuation ambulance company from the sanitary train of the 41st Division (the First Depot Division). The commander-in-chief approved the recommendation and the company formed 17 January 1918. Twenty-one evacuation ambulance companies arrived in France before the armistice out of the eighty-two organized.<sup>112</sup>

This shortage of transportation in the zone between the division hospitals and the evacuation hospitals hampered the Medical Department throughout the war. The main methods for remedying the shortfall were through pooling ambulance assets and by vigorous salvage and repair of those available. Jefferson R. Kean, in writing his report for the Military Board of Allied Supply estimated that the A. E. F. had a shortage of

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<sup>111</sup>Rhoads, "Division Evacuation," 296-97. *Field Operations*, 105-110. Historical Division, *General Orders*, 313-14.

<sup>112</sup>Rhoads, "Division Evacuation," 296-97. T. L. Rhoads, "Principles of Evacuation, III. Army Corps and Army Evacuation," *Military Surgeon* 54 (April 1924): 385-87. *Field Operations*, 207-212. *Administration, A. E. F.*, 342-46. Historical Division, *Reports*, 378-80.

ambulances of 40 per cent in April 1918, 50 per cent in September, and 20 per cent in October. Only during the last three months of the war did shipments of ambulances equal those needed. At the peak of the casualties from the Meuse-Argonne, the A. E. F. borrowed 180 ambulances from the Italians, 135 from the French, and 30 sight-seeing buses from the French.<sup>113</sup>

## HOSPITAL TRAINS

Hospital trains carried the patients from the evacuation hospitals. These came under the responsibility of the Chief Surgeon, A. E. F. as they were line of communication units. However, having the Chief Surgeon as part of the Services of Supply and not at G. H. Q. meant that the trains answered to two masters. The G-4, G. H. Q. issued the instructions governing the use of hospital trains. In the zone of the armies, the medical section in the fourth section of the general staff, A. E. F. controlled the hospital trains. The regulating officers under this section assigned the trains to the regulating stations. The regulating stations sent the trains to the hospitals that needed patients evacuated. The medical officer in each regulating station ensured that the trains were ready for operation with appropriate stocks of medical supplies. The regulating officers coordinated the evacuation by trains from the zone of the armies to the base hospitals in the rear. The troop movement bureau in the Services of Supply had the job of supplying the hospital trains for evacuations within the intermediate and base sections. This dual system of control occasionally led to conflicts and was another consequence of not keeping the Chief Surgeon at G. H. Q.<sup>114</sup>

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<sup>113</sup>*Administration, A. E. F.*, 342-47. Rhoads, "Army Corps and Army Evacuation," 386-87. *Field Operations*, 34-36, 207-12. Historical Division, *Reports*, 378-80.

<sup>114</sup>Letter of Instructions dated 29 August 1918, G-4, G. H. Q. reprinted in *Field Operations*, 266-67. *Administration, A. E. F.*, 317-18. *Field Operations*, 37-42, 263-66.

One of the early steps in setting up the evacuation system was acquiring hospital trains. The Medical Department rented two trains from the French in July 1917. The French had no more trains to lease to the Americans, so the A. E. F. placed orders with the British for the construction of forty eight standard hospital trains and twenty trains for sitting patients only. By the time of the armistice, the army had received nineteen trains . During the fighting at Saint Mihiel and in the Meuse-Argonne, when casualties mounted, the French leased the Americans forty-five trains and forty six trains, respectively. These trains were not specifically constructed as hospital trains, but were adapted to serve.<sup>115</sup>

These trains served as mobile hospitals as they moved the patients to the rear. The amount of time an injured soldier spent on a hospital train varied depending on his destination. These ranged from about five and a half hours for the evacuation from Toul to Vittel, to over thirty hours for the trip from the Argonne front to Bordeaux. Obviously, these freshly wounded men needed hospital care throughout their evacuation.<sup>116</sup>

The American hospital trains, constructed by the British, were marvels of traveling medical support. They could carry 360 litter patients and in emergencies, the train's staff would give their beds up for patients, increasing the number to 396. The beds were adjustable, so that each train could carry a mixture of litter and sitting patients. The usual arrangement had 120 beds and 480 seats. The trains had kitchens, offices, pharmacies, morgues, and all

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Historical Division, *Reports*, 376-78. Edward M. Colie, "Notes on Hospital Train Service in the A. E. F.," *Military Surgeon* 45 (September 1919): 328-37.

<sup>115</sup>*Administration, A. E. F.*, 318-21. *Field Operations*, 37-42, 263-67. Wadhams and Tuttle, "Early Problems," 653-56. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

<sup>116</sup>*Administration, A. E. F.*, 322. *Field Operations*, 276. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

the supplies necessary to care for the men transported. Separate sections cared for infectious and gassed patients. The ability to supply quality care in route made evacuation safer and allowed the hospital centers to be dispersed throughout the country.<sup>117</sup>

Regulating Stations	Wounded	Sick	Gassed	Total Americans	Grand Total	Total Trains
Creil	3,726			3,726	3,726	95
Le Bourget	44,205	9,609	4,844	58,450	58,658	297
St. Dizier	95,909	80,076	20,033	191,965	196,018	529
Connantre	8,442			8,442	8,442	34
Dunkerque	4,611			4,611	4,611	16
Totals	156,893	89,685	24,877	267,194	271,455	971

**Table 6:** Hospital train evacuations from the front.<sup>118</sup>

Table 6 shows the numbers of patients evacuated by train. Each regulating station served a specific region. The one at Creil served the Soissons and Picardy area; that at Le Bourget served Chateau-Thierry; Saint Dizier served Saint Mihiel; Meuse-Argonne, and Toul; Connantre served the Champagne sector; and Dunkerque served Ypres. In addition to these evacuations, the hospital trains moved 67,821 patients from base hospitals in the advance section to other hospitals further to the rear. This peaked in October 1918, when fifty-six French and thirty-three American trains carried 31, 777 patients.<sup>119</sup>

<sup>117</sup>*Administration, A. E. F.*, 320-332. *Field Operations*, 37-42. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

<sup>118</sup>*Field Operations*, 283. Historical Division, *Reports*, 378.

<sup>119</sup>*Field Operations*, 278-85. Wadhams and Tuttle, "Early Problems," 653-56. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

These numbers demonstrate the importance of the hospital trains to the smooth functioning of the medical service. In addition to trains, the A. E. F. used hospital barges, although the lack of loading docks and canals near many of the hospital centers prevented their widespread use. Without the steady and safe evacuation of the sick and wounded from the front, the evacuation and field hospitals would have rapidly filled to capacity. It also allowed the dispersion of the hospital centers throughout France and England which avoided overloading any single area. This improvised system met the challenge of the war.<sup>120</sup>

#### MEDICAL SUPPLY AND LABORATORY ORGANIZATION

The base medical supply depot provided medical supply to all units in its area, both in the Line of Communications and the Zone of the Advance. It usually used an advanced medical supply depot to supply the Zone of the Advance, while the base depot supplied the evacuation hospitals, base hospitals and other units in the Line of Communications. The field medical laboratory handled laboratory services in the area.<sup>121</sup>

#### SUMMARY

As the Medical Department arrived in France, a number of problems confronted it. One of the most important was to establish an administrative organization that could work as part of the overall administration at General Headquarters. This situation became more complicated by the difficulties that the whole A. E. F. had in organizing the headquarters. After the

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<sup>120</sup>*Administration, A. E. F.*, 320-332. *Field Operations*, 46, 278-85. Rhoads, "Army Corps and Army Evacuation," 386-87.

<sup>121</sup>*Medical Department Manual*, 229-30.

establishment of the S. O. S. and the medical section, G-4-B at G. H. Q., a workable system developed.

The situation confronting the Medical Department in establishing its medical care system also went through some changes before arriving at a workable system. Initially, the medical units provided care according to doctrine. The necessities of war forced many changes upon the system. Most of the changes resulted from the shortages of personnel and equipment that hampered medical care throughout the war. The Red Cross base hospitals provided the trained medical personnel to overcome these deficiencies. The Allies also supplied better ways of providing medical care from their years of experience in the trenches. From them, the A. E. F. developed the mobile surgical hospital, the surgical teams, and the system of evacuation. Having studied the general picture for medical support, the next chapter will investigate in detail how the system functioned in the various combat operations.